


FROM QUARRY TO GRAVEYARD

Corporate social responsibility in the natural stone sector
Labour, social, environmental and economic issues in the quarrying,
processing and trade of natural stone from developing countries.
Focus on India and the Netherlands.



*This report has been compiled at the request of
the India Committee of the Netherlands
and the Netherlands Society for Nature and Environment*

September 2006

'CSR is a process in which corporations take responsibility for the social, ecological and economic consequences of their actions – throughout their product and service delivery chains – making themselves accountable, and engaging in a dialogue with all those involved'.

CSR Frame of reference, Dutch CSR Platform, July 2003

Colophon

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By:

CREM

India Committee of the Netherlands

SOMO, Francis Weyzig

Roeline Knottnerus (editing) - roelien@xs4all.nl

Hans Maas (editing, lay-out and cover design)

Published by:

India Committee of the Netherlands

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India Committee of the Netherlands

This report is made possible with funding from the Netherlands Ministry of Housing, Spatial Planning and Environment (SMOM budget line) and the Netherlands Ministry of Social Affairs and Employment.

The report largely reflects the outcomes of a study undertaken within the framework of the project on the sustainable production of natural stone from developing countries. The findings presented in the report are the result of independent research and do not necessarily reflect the positions of the organisations involved in this project.

Landelijke India Werkgroep
India Committee of the Netherlands
Mariaplaats 4e
3511 LH Utrecht
The Netherlands
Tel: +31.30.2321340
Fax: +31.30.2322246
Email: natuursteen@indianet.nl
Web: <http://www.indianet.nl>

Stichting Natuur en Milieu
The Netherlands Society for Nature and Environment
P.O. Box 1578
3500 BN Utrecht
The Netherlands
Tel: +31.30.2331328
Fax: +31.30.2331311
Email: info@natuurenmilieu.nl
Web: <http://www.natuurenmilieu.nl>

SOMO
Centre for Research on Multinational Corporations
Keizersgracht 132
1015 CW Amsterdam
The Netherlands
Tel: +31.20.6391291
Fax: +31.20.6391321
Email: info@somo.nl
Web: <http://www.somo.nl>

CREM
Consultancy and Research for Environmental Management
Spuistraat 104d
1012 VA Amsterdam
The Netherlands
Tel: +31.20.6274969
Fax: +31.20.6266539
Email: info@crem.nl
Web: <http://www.crem.nl>

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Introduction



Background

Europe is currently importing natural stone from developing countries in increasing amounts.¹ Natural stone is commonly used in the building sector (including for garden ornaments) and in the funeral industry. India is an important developing country supplier of natural stone products. Indian granite for example, is widely used for tombstones throughout Europe.

One of the core activities of the India Committee of the Netherlands (ICN) involves the investigation of sectors and products from a Corporate Social Responsibility perspective. ICN seeks to motivate the corporate sector to take responsibility with regard to upholding labour rights and improving social, environmental and economic conditions, in particular in sectors in developing countries producing for Western markets. India's substantial share in Europe's growing natural stone trade made the Indian natural stone industry a logical focus for ICN.

In the course of time, ICN amassed some alarming information regarding the conditions in which Indian natural stone is quarried, processed and traded. To a large extent, the situation in India is exemplary of the situation in numerous other natural stone-producing developing countries, such as China - the upcoming global natural stone producer. ICN's still fragmented information reveals pressing labour and social issues in the largely informal natural stone sector, including child labour, sub-standard wages, several forms of bonded labour, unsafe working conditions, curbed freedom of association and absence of collective bargaining agreements. Environmental issues include large-scale conversion of agricultural grounds into wasteland, failing rehabilitation of abandoned quarries, deforestation, pollution of (ground) water. In addition, there are economic concerns relating to the value chain, pricing mechanisms, trade conditions, purchasing practices and so on.

In light of the development of the natural stone trade, ICN strongly felt that these issues warranted further investigation. Therefore, together with the Netherlands Society for Nature and Environment (*Stichting Natuur en Milieu*, or N&M), ICN saw fit to commission further research into the social and environmental aspects of the quarrying and processing of and trade in natural stone originating from developing countries - with a particular focus on natural stone quarried and processed in India and consumed in the Netherlands. The investigation, which resulted in the current report, was jointly carried out by CREM and SOMO.

The report will be disseminated in an effort to raise awareness among all relevant stakeholders of the natural stone product chain, focusing particularly on the Dutch and the Indian natural stone industry. The Dutch government in its role of institutional consumer and policy maker will also be addressed, as

¹ Although in the Netherlands natural stone is being used in increasing quantities, within the European context, the country ranks as an average consumer of natural stone products.

well as, to a lesser extent, private consumers of natural stone products in the Netherlands. This is part of a larger project of the India Committee of the Netherlands and the Netherlands Society for Nature and Environment focused on making the Dutch natural stone industry more sustainable.

In November 2005, the India Committee and N&M organised a round table on sustainable stone, with the participation of Dutch natural stone trade organisations and individual natural stone companies. At that occasion the Working Group on Sustainable Natural Stone was founded. The Working Group was set up as a first step towards a multi-stakeholder initiative for the Dutch natural stone sector. Since its inception, the Working Group met three times; the discussions within the Working Group are now geared towards the development of a frame of reference for Corporate Social Responsibility in the natural stone sector.

Objective

The main objective of this study was to get a clearer picture of the supply chain of natural stone at all stages of stone processing, e.g. from quarry to consumption. As such, the report seeks to provide a better understanding of the natural stone sector, in particular quarrying and processing in India and imports and consumption in the Netherlands. It gives a detailed account of the labour and social issues as well as the environmental and economic concerns in quarrying and in processing that need to be addressed from a corporate social responsibility point of view.

In addition, an overview is provided of existing government-driven sustainability policies and practices in the Netherlands relevant to the natural stone sector. The report also offers a survey of existing voluntary sustainability initiatives in or relevant to the natural stone sector. In practical terms, the research provides suggestions and recommendations on how the industry can assume its responsibility in improving social and environmental issues throughout the natural stone supply chain - from quarry to graveyard.

Study phases

The study was conducted in three phases:

Phase 1: Market- and stakeholder analysis of the Dutch natural stone sector.

Phase 2: Sustainability analysis, including the identification of labour, social, environmental and economic issues related to the production of natural stone in India.

Phase 3: Identification and analysis of existing corporate sustainability initiatives and relevant public policies and practices.

Reading guide

In the Executive Summary a concise outline of the entire investigation report is presented, including findings, concluding remarks and recommendations.

In the Introduction the background and the objectives of the investigation project are given.

In chapters 2 and 3 the findings of the market- and stakeholder analysis of the Dutch natural stone market are given.

In chapter 4 a sustainability analysis of the natural stone industry in developing countries is presented, providing details labour, social, environmental and economic issues related to the quarrying and processing of natural stone in India.

In chapter 5 existing international corporate and Dutch public policies and practises relevant for the natural stone industry are outlined. Also, suggestions for responsible production and processing standards of natural stone products in developing countries are provided.

A list of literature and sources is given for further reference.



Executive summary

One of the core activities of the India Committee of the Netherlands (ICN) involves the investigation of sectors and products from a Corporate Social Responsibility perspective. ICN seeks to motivate the corporate sector to take responsibility with regard to upholding labour rights and improving social, environmental and economic conditions throughout the value chain, in particular in sectors in India producing for Western markets. India's substantial share in Europe's natural stone trade made the Indian natural stone industry a logical focus for ICN. For this project, ICN found an interested partner in the Dutch Association for Nature and Environment (*Stichting Natuur en Milieu*, or N&M).

In the course of time, ICN collected alarming information regarding the conditions in which Indian natural stone is quarried, processed and traded. To a large extent, the situation in India is exemplary of the situation in numerous other natural stone-producing developing countries, such as China - the upcoming global natural stone producer. ICN's information reveals pressing labour and social issues in the largely informal natural stone sector, including child labour, sub-standard wages, bonded labour, unsafe working conditions, curbed freedom of association and absence of collective bargaining agreements. Environmental issues include large-scale conversion of agricultural grounds into wasteland, failing rehabilitation of abandoned quarries, deforestation and pollution of (ground) water. In addition, there are economic concerns relating to the value chain, pricing mechanisms, trade conditions, purchasing practices and so on.

In light of the development of the natural stone trade, ICN and N&M strongly felt that these issues required further investigation. The current report is the result of this investigation as carried out by SOMO and CREM.

In this report, the international market for natural stone and natural stone products is explored, with a particular focus on the natural stone trade between India and the Netherlands. In order to place the Dutch imports into a broader international context, and since the European Union plays an increasingly important role in (inter)national trade, trade policy and regulative harmonisation, the report also presents data on EU imports of natural stone products.

Further, the report looks into sustainability aspects of quarrying and processing of natural stone in India. Although the focus is on India, many issues tend to be illustrative for the quarrying and processing situation in developing countries in general. On the other hand, certain sustainability issues are not so much specific to the natural stone industry as such, but rather either specific to India (e.g. caste issues) or to (certain) developing countries in general (e.g. child labour).

Last but not least, the report looks at existing corporate social responsibility initiatives and sustainability schemes undertaken by the corporate and public sector, as well as by civil society groups, with a view to learn from them and possibly improve upon them.

Caution: figures!

All figures in this report should be seen as indicative and interpreted with caution. Cross border trade reporting is not without lacunae. Also, classification of natural stones is complicated. Further, the country where the natural stone is extracted is not always the country where the stone is processed and traded. The actual imports of stone originating from countries like India may be much higher than the trade statistics imply. Lastly, natural stone may be imported by actors whose core business is not natural stone: it is not clear to which extent such imports are registered. The Dutch CBI (Centre for the Promotion of Imports from developing countries) is an important source of information and statistics. At the time this desk research was undertaken, figures for 2004 were not yet available.

Variety

There is an enormous variety in natural stone. Worldwide there over 6,000 types of natural stone. These are further divided into subgroups such as marble, granite and slate. These subgroups comprise hundreds or thousands of stone types. From a trade perspective, natural stone products can roughly be divided into semi-finished and final products. Natural stone is used for memorial stones, kitchen counter tops, (floor) tiles, frontages, doorsteps, windowsills, art and garden ornaments, pavement materials, etc.

Upcoming stone producing countries replacing traditional producers

At the global level, production of natural stone and natural stone products witnessed a substantial increase over the last decade. An increasing number of countries is involved in the production of natural stone. The extraction and processing of hard stone types such as marble and granite went up explosively due to new production techniques. Whereas production in traditional European stone producing countries such as Italy, Spain and Portugal is stagnating, China, India, Turkey, Brazil and other developing and newly industrialised countries are constantly expanding their natural stone production. In terms of quantity, China now extracts twice as much natural stone as European market leader Italy.

European trends in imports and consumption

Nowadays, Europe's share of worldwide total consumption of natural stone is around 30 percent (CBI, 2004). In 2002, total European imports of natural stone and natural stone products amounted to € 2,116 million, representing a volume of 11,003 thousand tonnes.

Over the past decade, EU imports of natural stone and natural stone products originating from developing countries showed an increase. This trend seems to be continuing, even if the overall EU natural stone trade experienced a marked decrease in the early years of this century. This decline is at least partly explained by the EU trend of increasing imports of finished products (relatively less volume and more value). This implies that proportionally more added value remains in the exporting countries.

In 2002, developing countries accounted for 46% of the total value of EU natural stone imports (or 37% of the total volume):

India	€ 276 million
China	€ 221 million
Brazil	€ 153 million
South Africa	€ 104 million
Turkey	€ 77 million

In 2004, China became the most important supplier to the EU, overtaking India.

The total value of developing country exports to the EU is mainly made up by blocks (54 percent), followed by natural stone products for landscape design (22 percent), funeral and other art (12 percent), slabs (8 percent) and tiles for flooring and cladding (4 percent). Figures regarding trade volumes are not readily available.

Netherlands trends in imports and consumption

Globally, the Netherlands is a small consumer, accounting for approximately 1 percent of the world natural stone consumption (in square meters, in 2002). Nevertheless, in 2002, Dutch overall imports of natural stone and natural stone products (excluding slate and sandstone) amounted to a respectable € 138 million, representing a total volume of 1,652 thousand tonnes (CBI, 2004). About € 55 million out of this total is made up by imports from developing countries, including for almost € 17 million from India (2003).

Almost all natural stone imported by the Netherlands is destined for national consumption, (re-) export is insignificant.

Following the European trend, Dutch import volumes of natural stone and natural stone products increased up till 2002. The Netherlands obtains its natural stone from the countries dominating EU imports as a whole: China, India, Brazil, Turkey and South Africa. Dutch imports follow the EU trend of increasing imports of finished products from developing countries, in particular in the funeral industry and other art ornaments (including garden decorations). Rough blocks are barely imported into the Netherlands anymore.

From 2002, import volumes decreased. Contrary to the European trend, Netherlands import volumes originating from developing countries also decreased, and quite substantially, by 26% in 2002. Import value also decreased, but less dramatically, by 11% (CBI, 2004). This can be attributed to the increase in import share of final products. Also, the price of raw natural stone (per block, square meter or piece) from developing countries simultaneously experienced a decline.

Actors within the Dutch natural stone industry

Within the Dutch natural stone industry, four sectors can be distinguished: the building sector, the funeral sector, the retail or consumer sector, and the national natural stone processing sector. The market share of these individual sectors is difficult to quantify as there are but few figures available.

The Netherlands has approximately 50 wholesalers/importers of natural stone. This group comprises of importers catering to the construction and building (materials) sector and importers catering to the funeral industry, including key companies such as [REDACTED]. A rough estimate suggests that [REDACTED] and [REDACTED] together account for some 30 percent of total imports and distribution of natural stone products. The latter four importers jointly account for a market share of again approximately 30 percent.

Dutch companies do business directly with stone quarries, as well as, more importantly, with the stone processing industry in natural stone producing countries. Not only the Dutch wholesale trade, but increasingly also the Dutch natural stone-processing industry imports natural stone products from abroad. Moreover, it is not uncommon for contractors or architects in charge of projects requiring large quantities of natural stone to engage in direct business with suppliers in order to avoid

intermediate trade margins. Even Dutch local governments occasionally buy stone abroad, directly from the stone processing factories or sometimes even from the quarries.

The natural stone processing industry in the Netherlands consists of approximately 700 small to medium-sized companies, all with a relatively modest turn-over. In addition to the large number of small-sized stonemason's yards, there are a few large companies engaged in the funeral sector. The [REDACTED] used to stand out, but has recently gone bankrupt.

The most important trade organisations are the [REDACTED] and the [REDACTED]. [REDACTED] is a trade association for natural stone processing companies, representing employer interests. Membership is voluntary. The [REDACTED] lists about 200 members, a coverage of about 30%. [REDACTED] is a trade association for wholesalers of natural stone in the Netherlands. The [REDACTED] started out with 13, and has currently eight members, including the larger wholesalers. Coverage is estimated at 10 to 15 percent of all Dutch natural stone traders.

The Dutch government is an important consumer of natural stone. The Government Building Agency (*Rijksgebouwendienst*) and the Road and Hydraulic Engineering Institute (*Dienst Weg- en Waterbouwkunde*), part of the Dutch Public Works Department (*Rijkswaterstaat*) play a crucial role in the purchasing of natural stone.

Architects also have a major say in the choosing and purchasing of natural stone.

Indian stone in the Netherlands

The most commonly used types of stone in the Netherlands are slate, granite and sandstone. The most important type of stone derived from India is granite, as import figures show, in terms of volume and value, in semi-fabricates (slabs) as well as in final (worked) products.

Figures on the proportionate distribution of natural stones from India in relation to the different sectors or products are not available. Most of the natural stone from India is likely to be used in the funeral industry. Granite is used in memorial monuments, ornamental art (funeral industry) as well as in windowsills, doorsteps, countertops and frontages. Slate and sandstone are mainly used in floors. Seven out of the top ten stones used in retailing catering to the interior design sector originally derive from India. Of these stones, granites constitute an important category (six out of seven are granites).

It is impossible to estimate the proportion of (Indian) natural stone used in the public sector, also because large-scale projects tend to bypass the natural stone processing industry and wholesalers of natural stone by importing directly.

Since 2001, the Dutch import value of natural stone products originating from India has decreased. Interviewed stakeholders in the Netherlands suggest that this is a structural decline. China is becoming increasingly important as a supplier of natural stone and natural stone products, at the expense of countries like India.

Social, environmental and economic aspects of stone quarrying and processing in India

The research shows that a great number of issues in India's natural stone industry need to be addressed most urgently. Clearly, universal human rights, ILO conventions and relevant national legislation are violated on a wide scale.

Without exaggeration it can be said that a majority of quarry workers is indebted to its employers and works under conditions of bonded labour. When bonded workers die, their debts are often passed on to their families. Then the children are forced to go out to work in order to pay off these debts, perpetuating the situation of bondedness.

Child labour is common in India's stone quarries. Children tend to start working in quarries long before they reach the age of 14 and are often made to perform hazardous tasks. Among the causes of child labour are existing social norms and caste oppression, lack of adequate education and child-care facilities, a structural situation of labour exploitation, bonded labour and – often resulting – acute poverty.

Discrimination is very much an issue in the sector. Women do not receive wages equal to men, and children are paid even less. In the context of affirmative action programmes fixed quota of quarry leases are reserved for Dalits and 'Other Backward Classes'. However, few of these leases are really used by the intended beneficiaries. The illegal trade in such leases is rampant. Most workers are low caste migrants who are looked down upon by their employers as well as by the local population of the village where they have settled for the duration of their stay.

Legal limits to working hours are not respected. Excessive overtime seems to be part and parcel of the way work is organised in quarries and stone processing factories.

Hazardous working conditions are common. In granite, marble and sandstone quarries workers are exposed to a high incidence of fatal occupational diseases such as silicosis and tuberculosis. These diseases are also common in non-mechanised processing plants. Accidents at work, sometimes resulting in the death of workers, occur frequently in the quarries. Workers are required to carry very heavy weights, mainly in shallow quarries and non-mechanised plants. Even the most basic safety provisions, such as dust masks, protective shoes, gloves, are usually absent.

The stone quarrying and processing industry in India is largely informal. Trade unions are mostly unheard of. Efforts to set up unions are often thwarted by employers. Freedom of association is a vague notion. As a consequence, the right to collective bargaining is not respected.

Employment security is a mockery, especially in the quarries. In the rainy season, stone can not be extracted and workers are without work for months on end. As contract are not provided, workers can be laid off at any time, often without payment of dues.

Migrant workers (and their families) are sometimes provided accommodation at the quarry, but of the most simple type. Drinking water, electricity and other basic social services such as child care, schools or medical facilities are not available in the often remote quarry areas.

Irresponsible solid waste disposal by quarries and processing plants is a frequently occurring phenomena, causing severe damage to agricultural areas. National environmental laws and regulations are violated.

Quarrying in general leads to habitat destruction. In addition, illegal quarrying occurs in protected habitats. The obligatory restoration, reclamation and rehabilitation of mines, as required by Indian law, is often side-stepped.

Corruption is an important feature in many Indian companies and in public life, and the natural stone industry is no exception. As a consequence, companies get away with operating illegal quarry leases, and violating labour and environmental laws. Taxes and royalties are often not paid.

The impact of irresponsible quarrying on local communities is massive. Cheaply paid migrant workers settling in the quarry areas disrupt the delicate equilibrium of supply and demand of labour. Local economic patterns based on agriculture are under pressure by the expanding natural stone industry.

A lack of record keeping by quarrying and processing companies adds force to the consistent violation of Indian labour laws and makes verification of company practices impossible. The failure to keep written employment registers is in itself a violation of various national laws.

Corporate social responsibility and the Dutch natural stone market

Natural stone companies and trade organisations in the Netherlands are increasingly aware of the concept of corporate social responsibility. Some companies have taken steps to look into CSR issues. This is a very positive and hopeful development. Some companies, including ██████████ and ██████████, and trade organisations ██████████ and ██████████ are participating in the Working Group on Sustainable Natural Stone (see below).

So far, however, the Dutch natural stone sector has not yet come up with sustainability initiatives with a focus on the international product chain of natural stone, or initiatives that can be characterised as full fledged CSR initiatives. Public policy is mainly occupied with issues related to the social and environmental impact of the use of natural stone in the Netherlands only. However, government policy on sustainable purchasing is being implemented in the coming years. By 2010, the purchasing of natural stone by the government should will be governed by sustainability criteria.

Trade organisation ██████████ has a code of conduct which briefly refers to corporate social responsibility, calling ██████████ members to operate in a socially responsible way. As it stands now this concept is not elaborated in much detail. However, to celebrate its centennial, the ██████████ organised a symposium in May 2006 on 'the internationalisation of the natural stone sector and corporate social responsibility'. Also, ██████████ is currently developing a benchmarking scheme, to be presented to the ██████████ members by October 2006. This 'certificate', however, does not deal with international supply chain issues and does not provide benchmarks for integration of CSR into the management system.

In Germany, the Xertifix certificate for child labour free granite from India was set up. So far, two small German tomb stone importers have adopted the Xertifix code. The European Eco-label is an environmental certificate for non-food products and services. By using the label companies can demonstrate that sustainability is part of their core business. The Eco-label, however, is only looking into environmental issues, social aspects are not taken into account. The Dutch Foundation *Stichting Milieukeur* (SMK) supports organisations and companies in their efforts to work according to CSR principles. In the detailed certification scheme for furniture requirements for stones are formulated, concerning, specifically, the extraction of natural stones. The crucial element is landscape rehabilitation based on an acknowledged environmental impact assessment. Social aspects, however, are not considered. In the United Kingdom, Marshalls, a company specialising in construction materials including natural stone, has developed a sustainability policy. Marshalls has adopted the Ethical Trading Initiative (ETI) base code and has successfully implemented this code with its Chinese and India suppliers of natural stone. However, Marshalls limits its dealings to its first tier suppliers, meaning that social or environmental problems occurring at quarry level are not looked into.

It is no exaggeration to say that the project on sustainable natural stone set up by the India Committee of the Netherlands, together with the Dutch Association for Nature and Environment, Research Centre for Multinational Corporations SOMO, and CREM is the most methodical initiative in this field. The current report is the result of research commissioned by this project. In November 2005, a round table on sustainable natural stone was organised with the participation of the two trade organisations and a number of individual natural stone companies. The Working Group on Sustainable Stone was the result of this round table. Since its inception the Working Group has met several times

for in-depth discussion on the social and environmental issues related to the extraction and processing of natural stone in developing countries, and the role of Dutch European natural stone companies in addressing and preventing these problems. The main challenge is how to give hands and feet to the concept of chain responsibility. To this end, a 'CSR frame of reference for natural stone products' was developed. (A concise version of this frame of reference is annexed).

Conclusion

The quarrying and processing of natural stone is characterised by major social and environmental problems. Desk study of sources describing the situation in India, after China the most important natural stone producing and exporting country in the world, clearly reveals this. Problems include bonded labour, child labour, hazardous and unfair working conditions and a series of environmental issues such as land degradation.

National legislation as well as international standards are being violated on a large scale. From a legal perspective this is a major challenge, in particular for the authorities of natural stone producing countries.

Also from a social corporate responsibility perspective this situation demands a pro-active approach. Natural stone companies, wholesale traders as well as processing companies, have a role to play.

The global natural stone trade has not yet taken up this challenge in any serious way. All existing initiatives that are relevant for the natural stone sector have fundamental flaws. A persistent weak point of such initiatives is that the concept of chain responsibility is barely developed or implemented beyond the first supplier.

However, there are good reasons and opportunities for change. Natural stone companies increasingly realise that corporate social responsibility is part and parcel of good entrepreneurship.

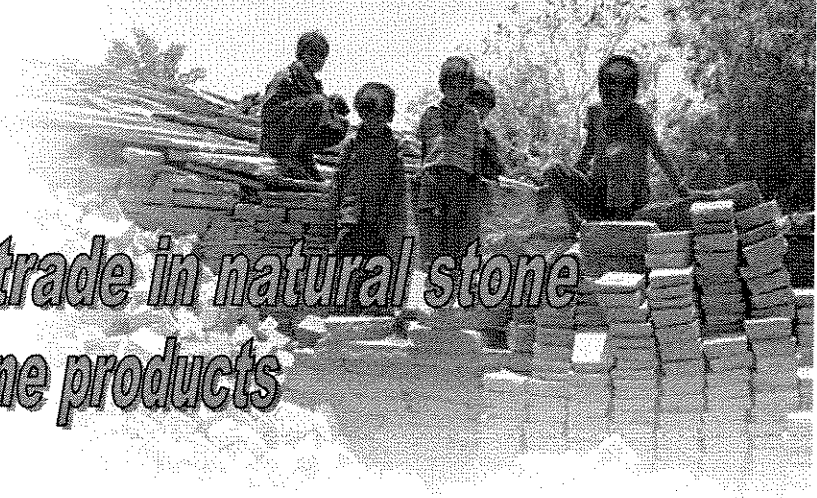
The initiative set up by the India Committee of the Netherlands, in collaboration with the Association for Nature and Environment, CREM and SOMO is a comprehensive effort to address social and environmental problems in the supply chain in an integrated way. The Working Group on Sustainable Natural Stone offers a platform to Dutch companies and trade associations to develop and implement a viable mechanism to clean up the international supply chain of natural stone. The active participation of companies and trade organisations in the Working Group is of the utmost importance and is very much welcomed. The initiative will continue to look into and learn from other relevant (international) initiatives.

Dutch as well as European natural stone companies and trade associations are invited to join this initiative. The Dutch Sustainable Stone Initiative calls upon other actors in the natural stone business, including the government, to tailor its purchasing policies and practices to the norms outlined in the CSR Frame of Reference for natural stone products that is currently being developed.

FROM QUARRY TO GRAVEYARD
EXECUTIVE SUMMARY

Chapter 1

International trade in natural stone and natural stone products



This chapter explores the international market for natural stone and natural stone products, with a particular focus on the natural stone trade between India and the Netherlands. However, as the EU plays an increasingly important role in the (inter)national trade (policy and regulative harmonisation) and in order to place Dutch imports into a broader international context, data on EU imports of natural stone products are presented as well. Because of the limited timeframe and scope of the study, only data readily available in the literature and on the internet were used. Therefore, data on EU imports may comprise slightly different natural stone groups (see paragraph 1.1) than the compiled data covering Dutch imports from India.

The main topics addressed in this chapter include:

- the classification of natural stone;
- countries of origin of natural stone (products);
- imports of natural stone and natural stone products by the EU;
- imports of natural stone and natural stone products by the Netherlands;
- imports from India by the Netherlands;
- exports of natural stone and natural stone products from the Netherlands.

It is important to note that trade and other figures presented in both this chapter and chapter 2 should be seen as indicative and interpreted with caution. Since the removal of the intra-EU borders in 1993, trade data are no longer registered by customs officials according to standardised customs procedures. Currently, reporting is compulsory only for companies exceeding a certain annual trade value (threshold), which differs from country to country. The Netherlands, for example, maintain a threshold of € 100,000. Trade figures between EU and non-EU countries should be more accurate, as these figures continue to be based on registration by customs officials. However, classification of natural stones is complicated² and mistakes are likely to occur. A further complicating factor is that the country where the natural stone is extracted is not always the country in which it is processed and traded. Lastly, natural stone may be imported by actors³ whose core business is not natural stone: it is not clear to which extent such imports are registered, in particular within the EU.

1.1 Classification of natural stone: natural stone product groups

There is an enormous variety in natural stone. Worldwide there are over 6000 types of natural stone. Depending on natural stone's origin and composition, it is ranked as belonging to a certain stone 'type' or 'group'. In general, natural stone is divided into four main groups: '*hypogene, igneous, sedimentary and metamorphic rock*'. These are further divided into subgroups. Well-known subgroup types include,

² For example, it is hard to distinguish between standard and calcareous sandstone.

³ E.g. local authorities may procure Indian stone from Italy.

for example, marble, granite and slate. These subgroups can comprise hundreds or thousands of stone types.

After being quarried, natural stone is further processed into natural stone products.

Natural stone is used in a wide range of products. Important final natural stone products are:

- memorial stones (gravestones, tombstones);
- kitchen counter tops;
- (floor) tiles;
- frontages;
- doorsteps, windowsills, etc.;
- art and garden ornaments;
- pavement materials.

These products can be made of different types of natural stone, although some natural stone types are preferably used for a specific kind of product, because of factors including suitability, functionality and taste. Granite kitchen counter tops are a good example.

There are several ways to (further) classify natural stone and natural stone products. For the purposes of this study, a combined 'trade and user' perspective was decided upon: the natural stone products were grouped in semi-finished products and final products and further subdivided according to their intended use.

From a *trade perspective*, natural stone products can roughly be divided into semi-finished and final products, further subdivided according to stone types.

The Harmonised System (HS) Code is an international method of classifying products for trading purposes, introduced to harmonise trading classifications worldwide and to allow for improved international comparability of foreign trade statistics. The HS Code is used by customs officials worldwide to determine the duties, taxes and regulations that apply to products. Table 1 provides an overview of the HS 6 digit code classification of natural stone products.⁴

Table 1: Natural stone related HS codes

HS code	Product description	
25	Salt, sulphur, earth & stone, lime & cement	Intermediate products
2514	Slate, crude or roughly trimmed	Blocks
2515	Marble, travertine etc. and alabaster, crude or roughly trimmed	
251511	Marble, travertine (crude or roughly trimmed)	
251512	Marble, travertine (merely cut by sawing or otherwise)	
251520	Ecaussine, other calcareous monumental or building stone	
2516	Granite, porphyry, basalt etc., crude or cut etc.	Slabs
251611	Granite (merely cut by sawing or otherwise)	
251612	Granite (crude or roughly trimmed)	
251621	Sandstone (crude or roughly trimmed)*	
251622	Sandstone (merely cut by sawing or otherwise)*	
251690	Other monumental or building stone	

contd. >>

⁴ The HS system also provides an eight-digit product classification. Some natural stone products are further subdivided into 8-digit codes, based on the thickness of the product or detail of processing (carved or not carved for example).

Table 1: Natural stone related HS codes (contd.)

HS code	Product description	
68	Articles of stone, plaster, cement, asbestos, mica or similar materials	Finished/worked products
6801	Sets, curb stones and flagstones, of natural stone (except slate)	Landscape design
6802	Worked monumental stone & art, granule etc.	Flooring and cladding
680221	Marble, travertine and alabaster, simply cut or sawn, with a flat or even surface	
680222	Other calcareous stone, simply cut or sawn, with a flat or even surface	
680223	Granite, simply cut or sawn, with a flat or even surface	
680229	Other monumental or building stone and articles thereof, simply cut or sawn, with a flat or even surface	
6803	Slate, worked and articles, articles of agglomerated slate	
680291	Marble, travertine and alabaster in any form, polished, decorated, carved or otherwise processed	Funeral and other art
680292	Other calcareous stone in any form, polished, decorated or otherwise worked and carved, carvings	
680293	Other granite, in any form, polished, carved or otherwise processed, or sculptures	
680299	Other monumental or building stone and articles thereof	

* The definition of sandstone used here: Sandstone is a sedimentary stone which consists of grains of sand (quartz sand or siliceous sand) cemented with a binding agent (for silica, calcium carbonate). It does not define the percentage of quartz in the sandstone.

The HS 25 product classification applies to semi-finished products, which can be subdivided into blocks and slabs. HS 68 codes refer to finished or worked products. Based on the sector for which products are destined they can be categorised into the following product groups:

- natural stone products used for flooring and cladding;
- natural stone products for urban and rural landscape design;
- natural stone products used for religious or other art (such as tombstones and garden decorations).

An alternative approach is the PRODCOM classification. This classification is used by the EU member states to record annual production values. The PRODCOM classification differs slightly from the HS classification. Table 2 provides a description of the PRODCOM system, PRODCOM codes and the corresponding HS codes for categories of natural stone described in this study (PRODCOM, 2002; CBI, 2004). The PRODCOM classification as listed in table 2 was applied in paragraph 1.4, which deals with the consumption of natural stone, as production data are necessary to assess estimated consumption (consumption = production + import - export).

The list is not exhaustive as there are more categories of natural stone.

Table 2: PRODCOM classification of natural stone products

Category	PRODCOM	HS	Description PRODCOM classification
Intermediate marble products	14.11.11.33	25151100	Marble and travertine; crude or roughly trimmed
	14.11.11.35	25151220 25151250	Marble and travertine merely cut into rectangular or square blocks or slabs of a thickness \leq 25 cm thick
	14.11.11.37	25151290	Marble and travertine merely cut into rectangular or square blocks or slabs of a thickness > 25 cm
Intermediate granite products	14.11.12.33	25161100	Granite; crude or roughly trimmed
	14.11.12.35	25161210	Granite merely cut into rectangular (incl. square) blocks or slabs of a thickness \leq 25 cm
	14.11.12.37	25161290	Granite merely cut into rectangular (incl. square) blocks or slabs of a thickness > 25 cm
Worked calcareous products	26.70.11.00	68022100	Worked monumental/building stone & articles thereof, in marble, travertine & alabaster excl. tiles, cubes/similar articles, largest surface < 7 cm ² , sets, kerbstones, flagstones
		68029110	
		68029190	
	26.70.12.40	68022200 68029210 68029290	Other calcareous stone, cut/sawn, flat/even surface, otherwise worked
Sets, kerbstones and flagstones	26.70.12.10	68010000	Natural stone sets; kerbstones and flagstones (excl. of slate)
Worked granite products	26.70.12.60	68022300	Worked monumental or building stone & articles thereof, of granite excl. tiles, cubes & similar articles, largest surface area is < 7 cm ² , sets, kerbstones & flagstones
		68029310	
		68029390	
	26.70.12.80	68022900 68029910 68029990	Worked monumental or building stone and articles thereof (excl. of calcareous stone; granite or slate, tiles; cubes and similar articles; of which the largest surface area is < 7 cm ²)

Source: PRODCOM (2002)

1.2 Supply of natural stone and natural stone products

Within the EU, Italy, Spain and Portugal are important suppliers of natural stone and natural stone products for the EU and Dutch markets. The trade centres on Italy, as the most important EU supplier of natural stone. The most important developing or newly industrialising countries acting as suppliers of natural stone and natural stone products are China, India, Brazil, and Turkey (interviews stakeholders, CBI). The top five suppliers of natural stone to the EU are Italy, India, China, Brazil and Spain, with a value of € 1,320 million (CBI, 2004).

At the *global* level, production figures of natural stone and natural stone products witnessed a substantial increase over the last decade, with an increasing number of countries involved in the production of natural stone. The worldwide production of natural stone has increased by 30 percent in the last 10 years (Stone Report 2002). In the last few decades, the extraction and processing of

marble and granite went up explosively due to new production techniques facilitating the exploitation of such hard stone types in particular.

Table 3 outlines the most important supplying *developing or newly industrialising* countries per natural stone product group to the EU based on import values. Other import figures for the EU and the Netherlands are listed in paragraph 1.4.

In terms of quantity, China now extracts around twice as much natural stone from its many quarries as European market leader Italy. India also overtook Italy last year for the first time (Stonereport, 2004). The volume of Chinese foreign trade in natural stone – total imports and exports – reached a value of slightly less than 2 billion US dollars in 2003. In terms of value, this means China still ranks number 2 on the international market after Italy.

Table 3: Leading developing country suppliers per product group imported into the EU, in millions €, 2002

Product group/country	India	China	Brazil	South Africa	Turkey
Raw blocks	137,0		128,0	97,0	15,0
Stone slabs	11,9	20,4	6,0	3,6	17,2
Landscape design	24,2	69,7	6,0		9,2
Funeral and other art					
Tiles (flooring and cladding)	13,0	18,0	4,4		15,0

Source: CBI, 2004

1.3 Countries of origin natural stone

However, import statistics are to a certain extent misleading in that they portray only part of the picture: the country processing and exporting natural stone products (i.e. intermediate products and finished products) is not always the country in which the natural stone was originally extracted. Italy, for example, has a central role in the marketing of natural stone within the EU. Both domestic and imported standard raw blocks are traded and further processed in Italy before selling the end products on to other EU countries and non-Member States. Outside the EU, China is a major importer of intermediate natural stone products from countries such as India, Turkey and Brazil, but also Italy and Finland. The vast share of these imported intermediate products are further processed into finished goods before exporting them worldwide. For example, about one third of the natural stone products being sold in the heart of the natural stone market in China - Xiamen harbour - derive from imported and processed natural stone. 43 countries in total export their natural stone to China for further processing and marketing (Stonereport, Nederlandse Natuursteenbond, Natuursteen Magazine 2005). This means that the actual imports of stone originating from countries like India may be much higher than the trade statistics imply: in other words, these figures relate to minimum imports.

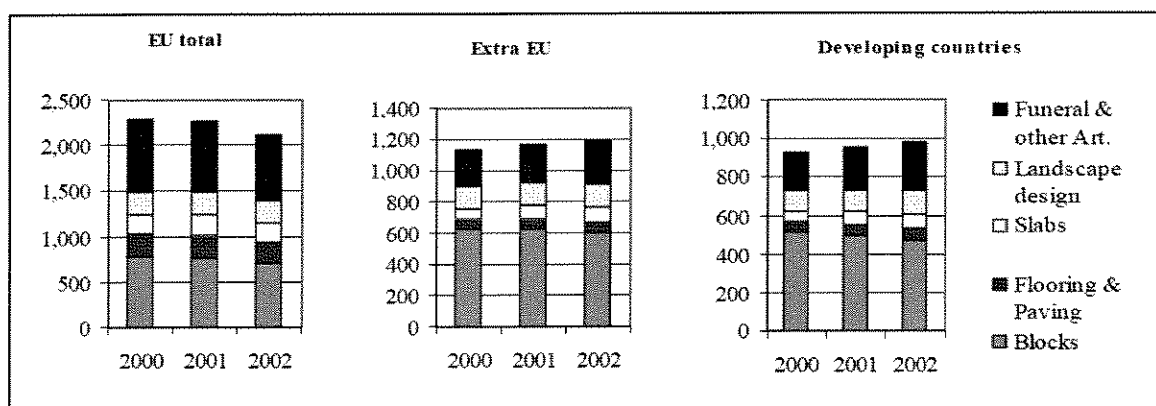
1.4 Imports of natural stone and natural stone products into the EU and the Netherlands

1.4.1 EU imports of natural stone

The EU is an important importer and consumer of natural stone products. Europe's share of worldwide total consumption of natural stone is around 30 percent (CBI, 2004).

In 2002, total EU imports of natural stone and natural stone products reached a volume of 11,003 thousand tonnes, representing a value of € 2,116 million. An overview of *aggregate* EU imports of natural stone and natural stone products between 2000 and 2002 is presented below (CBI, 2004).

Figure 1: Overview of EU imports of natural stone and natural stone products in millions €, 2000-2002



Source: Eurostat, 2003 (CBI, 2004); slate and sandstone excluded.

The share of developing countries is considerable and accounts largely for all imports of natural stone from outside the EU.

Imports from developing countries⁵

Countries like China, India, Turkey, Brazil and other developing and newly industrialised countries are constantly expanding their natural stone production and are becoming increasingly important, whereas production in traditional European 'stone countries' like Italy and Spain is stagnating. Trade rankings have changed considerably within only a few years. Besides China and India, Turkey, Brazil and the USA rank among the strong climbers of the last five years, whereas Portugal and Greece had to accept setbacks (Stonereport, 2004).

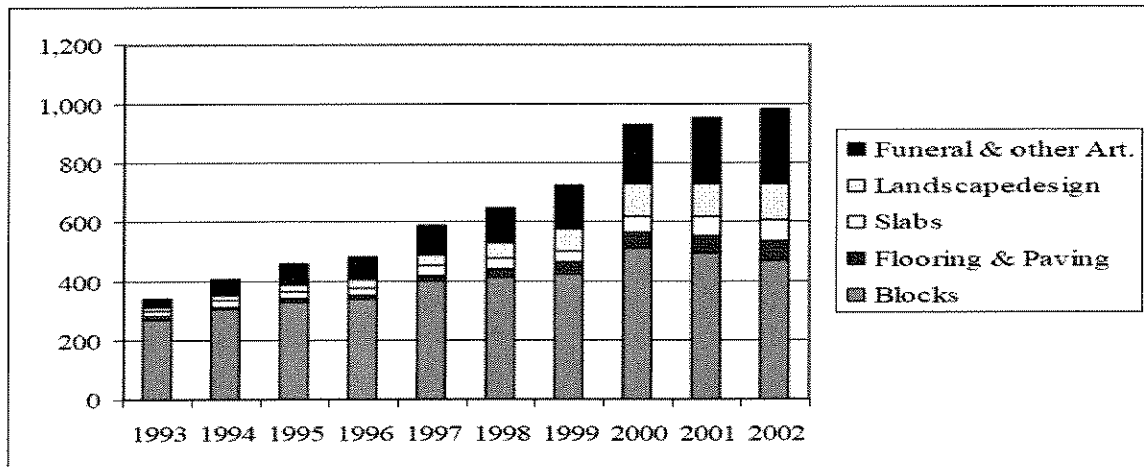
Between 1993 and 2003, the imports of natural stone and natural stone products from developing countries increased considerably (see figure 2). In 2002, developing countries accounted for 46 percent of the total value of EU natural stone imports and 37 percent of the total volume of EU imports.

⁵ Developing countries as listed by the OECD.

In 2002, India was still the most important supplier of natural stone and natural stone products to the EU (€ 276 million) of the developing countries, closely followed by China (€ 221 million), Brazil (€ 153 million), South Africa (€ 104 million) and Turkey (€ 77 million) (CBI, 2004). In 2004, China became the most important supplier, overtaking India (Stonereport, 2005).

However, as mentioned before, natural stone imported from China is partly extracted in other countries, with India prominent among them. However, indirect data on these (indirect) flows are not available.

Figure 2: Overview of EU imports from developing countries in millions €, 1993-2003



Source: Eurostat, 2003 (CBI, 2004); slate and sandstone excluded.

Within the EU, Italy is by far the most important importer of natural stone and natural stone products from developing countries, with imports of natural stone and natural stone products estimated at € 362 million in 2002. With an estimated import value of € 55 million, the Netherlands rank 6th, after Germany, Spain, Belgium and the United Kingdom (see table 4). Contrary to in particular Italy and Spain, which are large (re-)exporters of natural stone, almost all natural stone imported by the Netherlands is destined for national consumption (see also paragraph 1.4).

Table 4: Top eight EU Member States importing natural stone originating from developing countries, 2002

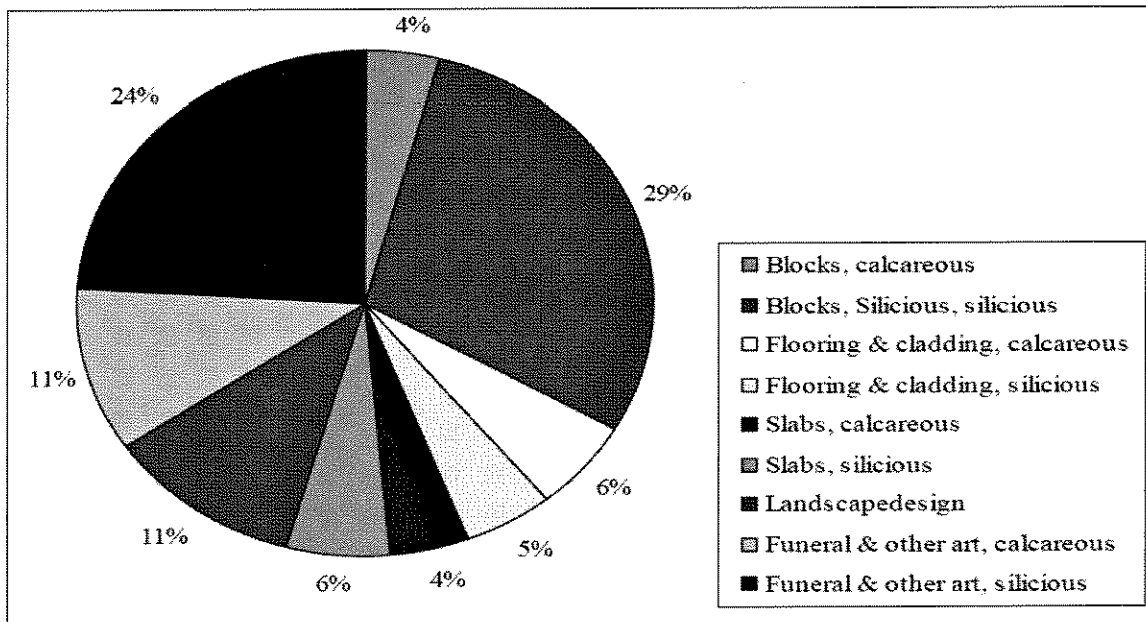
EU Country	Import value (€ million)
Italy	362
Germany	156
Spain	121
Belgium	80
United Kingdom	70
The Netherlands	55
France	50
Greece	23

Imports by product groups

With 35 and 33 percent respectively, funeral and other art ornaments (final products) and blocks (an intermediate product) each accounted for approximately one third of total EU imports of natural stone

and natural stone products; eleven percent of imports consist of products for landscape design; tiles for flooring and cladding accounted for 11 percent, followed by slabs, which accounted for 10 percent (see figure 3).

Figure 3: Value shares of product groups in EU imports of natural stone and natural stone products, 2002



Source: Eurostat, 2003 (CBI, 2004); slate and sandstone excluded.

The total value of developing country exports to the EU is mainly made up by blocks (54 percent), followed by natural stone products for landscape design (22 percent), funeral and other art (12 percent), slabs (8 percent) and tiles for flooring and cladding (4 percent). Figures regarding trade volumes are not readily available (CBI, 2004).

1.4.2 Dutch imports of natural stone and natural stone products

As the Netherlands has virtually no quarrying industry of its own, more or less all natural stone products produced and consumed in the Netherlands are imported.

Globally, the Netherlands is a small consumer, accounting for approximately 1 percent of the world natural stone consumption in square meters in 2002 (Stone 2003, World Marketing Handbook; CBI, 2004). Italy, for example, accounted for 8.1% of world consumption, followed by Spain with 5.8%. Outside the EU, China (11%), India (6%) and the United States (7%) are important consumers of natural stone.

In 2002, Dutch imports of natural stone and natural stone products amounted to € 138 million, representing a total volume of 1,652 thousand tonnes (CBI, 2004). It must be noted that these figures do not include much traded natural stone categories like slate and sandstone.

Import volume

In terms of import *volume*, Dutch imports consist mostly of semi-finished products (blocks and slabs). Import volumes declined dramatically - by approximately 35 percent - over the period 2001-2003 (see

table 5, source CBS Statline, 2005). CBI data show that slabs (already sawn and often polished on one side) account for the bulk of the import volumes, which is confirmed by interviews. Rough blocks are barely imported into the Netherlands anymore (*Centrum Natuursteen*, 2005).

Between 1996 and 2001, imports of blocks and slabs experienced a strong increase. The import volumes of finished goods into the Netherlands account for a relatively small share compared to the imports of semi-finished products; however, in terms of import *value*, finished goods account for the larger share of total Dutch imports.

The various finished products also experienced strong growth between 1996 and 2003. These, however, did not experience the sharp decline witnessed in semi-finished products since 2000. Some even continued to increase their market share. In terms of import volume, products for landscape design (sets, curb stones and flagstones) constitute the largest group of finished goods imported into the Netherlands, followed by funeral and other art ornaments (including garden decorations) (see table 5).

Import value

Not surprisingly, in terms of added value, imports of finished goods are more substantial than imports of blocks and slabs (intermediate products). This aside, import values largely follow the same trends as import volumes. However, the variances are less distinct. For example, the import value of blocks and slabs declined between 2001 and 2003, but only slightly compared to the decrease in volume. This may be explained by an increase in the imports of slabs (attributed added value); another possible explanation might be a relatively larger share in import volume of 'lighter' material.

Dutch imports follow the EU trend of increasing imports of finished products from developing countries, in particular in the funeral industry and other art ornaments (including garden decorations) (see also figures 1 and 3).

Table 5: Dutch imports of natural stone and natural stone products from all countries (EU and non-EU), in 1000 tonnes and millions € respectively, 1996-2003*

	1996		1997		1998		1999		2000		2001		2002		2003	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
Blocks & slabs	1390,2	30,4	1724,7	32,3	2749,4	57,2	2527,5	49,0	2059,3	57,0	3638,0	54,7	1955,3	53,4	1410,8	44,9
Landscape design	110,7	6,9	117,7	7,3	153,0	9,8	159,3	12,1	230,2	15,8	281,3	17,5	272,5	17,2	300,2	19,4
Flooring & cladding	23,6	9,6	30,9	14,0	51,1	15,6	49,3	15,9	55,6	15,9	59,4	15,9	61,0	19,0	43,5	17,2
Funeral & other art	37,0	25,9	38,8	28,0	46,8	34,6	66,0	43,8	79,8	43,8	71,3	47,3	65,7	47,3	67,4	49,9
Worked slate	-	2,1	-	2,0	-	2,0	-	2,2	3,1	2,2	4,5	3,0	7,9	2,8	3,9	2,2

Source: CBS Statline (2005).

* sandstone, slate, and stones such as porfier and basalt included.

It is important to note that table 5 contains more categories of natural stone than the tables and figures in the following paragraphs illustrating the natural stone imports into the EU. For EU imports only data readily available from CBI were used and these do not include the categories slate, sandstone and natural stone types such as basalt. The data from CBS Statline and the data on Dutch imports derived from CBI (Eurostat database) more or less coincide, except with regard to the import value of blocks and slabs:

- depending on the product group, the import values (and volumes) show a slight decrease since 2000, whereas up to 2000 import values and volumes showed a (considerable) increase;

- funeral and other art constitute the most important category of final products in terms of import value; in import volume, landscape design (sets, curb stones) constitutes the most important import category;
- blocks and slabs constitute an important product category in Dutch natural stone imports, both in terms of volume and of value: CBI/Eurostat data do not fully corroborate this, but the difference can be largely attributed to the omission of categories such as sandstone and other product groups;
- the import volumes of blocks and slabs has increased considerably between 1996 and 2001.

Between 2001 and 2003, import volumes showed a steep decrease, whereas import values only decreased slightly. This may be attributed to a relatively higher increase in the import share of slabs, which generate a higher price per m². This is consistent with the data from CBI/Eurostat.

Dutch imports from developing countries

As indicated, EU imports showed an increase over the past decade in the imports of natural stone and natural stone products originating from *developing* countries - including the period between 2000 and 2002, when EU trade in natural stone as a whole experienced a marked decrease. However, the Netherlands is one of the countries within the EU that form an exception to this trend (CBI, 2004).

Between 2000 and 2002, import volumes from imports originating from developing countries decreased substantially by 26 percent, while import values decreased by 11 percent (CBI, 2004). This means that the import value/volume ratio increased, implying that proportionally more added value remained in the exporting countries. Most likely the increase in the import value/volume ratio must be attributed to the increase in import share of final products, as the price of raw natural stone (per block, square meter or piece) from developing countries simultaneously experienced a decline (interviews with stakeholders).

As mentioned above, in terms of import value, the Netherlands is the sixth largest importer within the EU of natural stone and natural stone products originating from *developing* countries. The most important developing countries the Netherlands obtains its natural stone and natural stone products from generally coincide with the countries dominating EU imports as a whole: China, India, Brazil, Turkey and South Africa. However, it must be noted that in general stone from South Africa is not imported directly, but through China or Italy, (mostly) due to lack of processing (sawing) technology in South Africa. At the same time, stone obtained from India and China is now largely imported directly; only ten years ago, their raw stone was processed by Italy and Spain, whence it was further distributed to the Netherlands. Statistical data on such indirect trade flows are not available.

Dutch imports of natural stone and natural stone products originating from India

This paragraph deals with trade figures on Dutch imports of natural stone and natural stone products originating from India.⁶ As a case study, the natural stone trade between India as a supplier country and the Netherlands as a net consumer of natural stone products is a particular focus of this research study.

Figure 4 shows that between 1997 and 2002, 'total'⁷ Dutch import volumes of natural stone and natural stone products increased, followed by a rather dramatic decrease in import volumes in 2003. Although figures for 2004 are not yet available, interviews with stakeholders in the Netherlands suggest that this is not a 'one time event', but that it is more or less in line with the general decline in imports of natural stone from India. China is becoming increasingly important as a supplier of natural

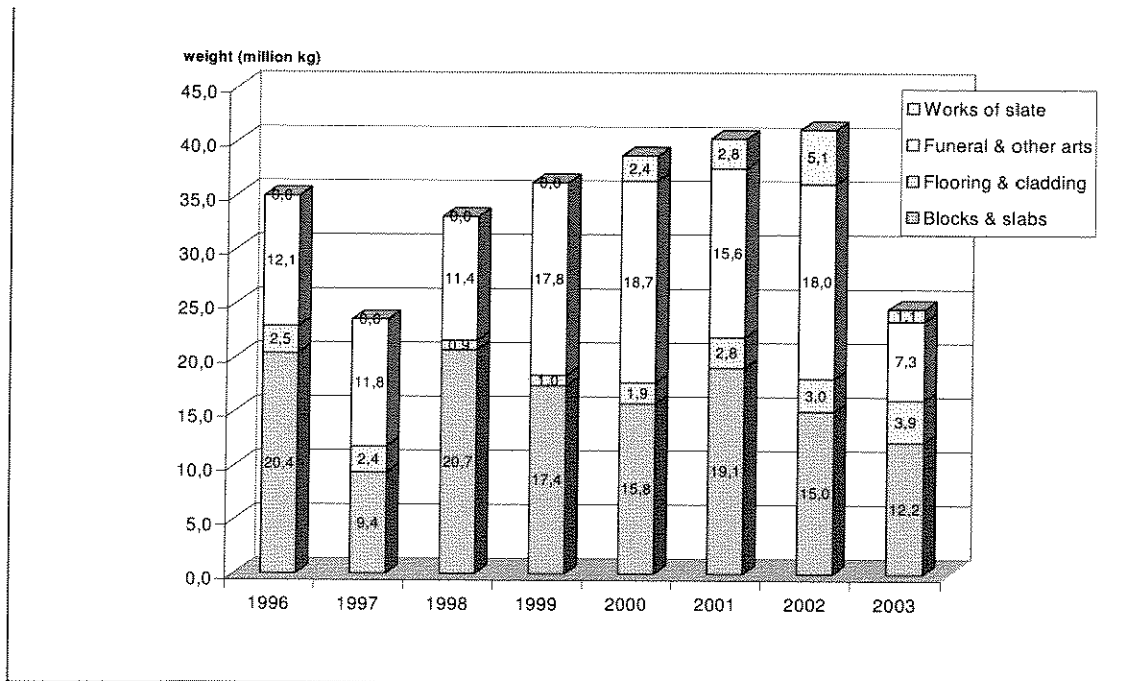
⁶ It is important to note that the figures presented in this section represent 'minimum imports' of natural stone originating from India, as the Netherlands may well be bringing in additional natural stone imports extracted in India, but processed in countries like China or Italy. As indicated before, quantitative data on such 'indirect' flows are not available. In addition, faulty registration may further affect real import figures.

⁷ Total Dutch imports are difficult to assess as these figures do not pertain to aggregate real imports due to the threshold the CBS Statline database maintains for registering imports (see paragraph 1.1).

stone and natural stone products at the expense of countries like India.⁸ At the same time, the share of final products in Dutch imports has markedly increased since 1997 (with the exception of 1998) and is expected to increase even further in the coming years, which may put further pressure on import volumes. This trend is in line with the general trend of an increasing share of final products in imports from developing countries.

In final products, funeral and other art ornaments (including garden decorations) account for the largest share (see also figure 4). Notably, imports of *finished* natural stone products for landscape design (sets, curb stones and flagstones) imported from India is negligible. As figure 4 shows, the CBS Statline database has no record for this product group at all. However, the Eurostat database does record Dutch imports of sets, curb stones and flagstones from India. Although the share of this product group in most years accounted for only 0.5 to 1 percent of total Dutch imports from India, the overall trend does appear to be an upward one, as imports have risen steadily over the years (1995-2003). In fact, in 2003, this product group's import share tripled, rising steeply up to almost 3 percent.

Figure 4: Total Dutch natural stone imports from India by product group 1996-2003 (x 1000 tonnes)



Source: CBS Statline, 2004

Since 2001, the 'total' Dutch import value of natural stone products originating from India has decreased. Dutch natural stone imports from developing countries as a whole were in decline over the past few years – contrary to the overall trend in most other EU countries.

Table 6 (further) specifies Dutch import volumes and value of natural stone and natural stone products according to natural stone type and the extent of processing in line with the classification used by the Dutch government (see table 1).

⁸ See chapter 2 for more information on these trends.

Table 6: Dutch import volume (x 1000 tonnes) and import value (x million €) of natural stone products from India, 1996-2003

	1996		1997		1998		1999		2000		2001		2002		2003	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
Granite, crude or roughly trimmed	3,72	0,59	2,50	0,50												
Granite merely cut by sawing or otherwise	16,7	2,7	6,86	1,3	20,7	3,4	17,4	3,3	15,4	3,3	15,8	3,4	12,1	2,7	9,28	1,9
Sandstone merely cut by sawing or otherwise									0,43	0,11	3,34	0,57	2,94	0,48	2,92	0,53
Other worked calcareous stone (in flat/ even surface)											0,62	0,13			2,73	0,37
Worked granite (in flat/ even surface)	0,69	0,60	1,38	1,4	0,90	1,1	0,99	0,74	1,10	0,42	0,84	0,71	0,51	0,33	0,58	0,33
Worked monumental stone (in flat/ even surface)	1,83	0,41	1,01	0,23					0,83	0,30	1,37	0,36	2,53	0,51	0,61	0,19
Works of marble (polished carved etc)	0,25	0,26	0,32	0,37												
Works of granite (polished, carved etc)	10,1	8,8	11,1	9,4	10,0	8,5	14,1	11,5	16,4	14,1	15,2	13,7	13,8	12,2	15,2	12,5
Works of other monumental stone (polished, carved etc)	0,81	0,22	0,67	0,36	1,10	0,56	1,97	0,71	3,60	1,4	1,76	0,82	1,70	1,4	2,26	0,62
Worked slate and articles thereof									2,37	0,76	2,76	0,93	5,06	0,12	1,14	0,23

Table 6 shows that, in terms of both import volume and import value, granite is by far the most important type of stone derived from India, both in semi-fabricates (slabs) and final (worked) products. Marble seems to have become a negligible natural stone group in the last few years. Table 6 also shows that in the last three years sandstone has become a relatively important group. Between 2000 and 2002, slate was an important natural stone category, both in volume and value.

1.4.3 Dutch exports of natural stone and natural stone products

As the Netherlands hardly has any stone quarries of its own, most of the natural stone and natural stone products imported are destined for domestic use. The Netherlands exports only a negligible amount of natural stone products.

Figures compiled by CBI (based on Eurostat) show that in 2002, the Netherlands imported natural stone to an import value of € 137 million and an import volume of 1,652 thousand tonnes. Dutch exports amounted to some 1500 tonnes of natural stone in 2002, with a value amounting to € 0.5 million (slate, sandstone and such excluded).

Chapter 2

Structure of the Dutch natural stone market



This chapter analyses the Dutch market for natural stone and natural stone products. Topics that are addressed are:

- the (Dutch) natural stone chain and trade structure;
- consumption of natural stone and natural stone products;
- case study India - the Netherlands;
- corporate sustainability initiatives and relevant public policies and practices;
- trends in the natural stone market.

2.1 (Dutch) natural stone chain

As indicated in the previous chapter, virtually all natural stone products produced and consumed in the Netherlands are imports. Figure 5 depicts the international product chain for slate and quartzite and the international production chain for 'all' other stones (granites, marbles, (calcareous) sandstone etcetera).

Figure 5: International product chains of natural stone

Granites, marble and comparable stones

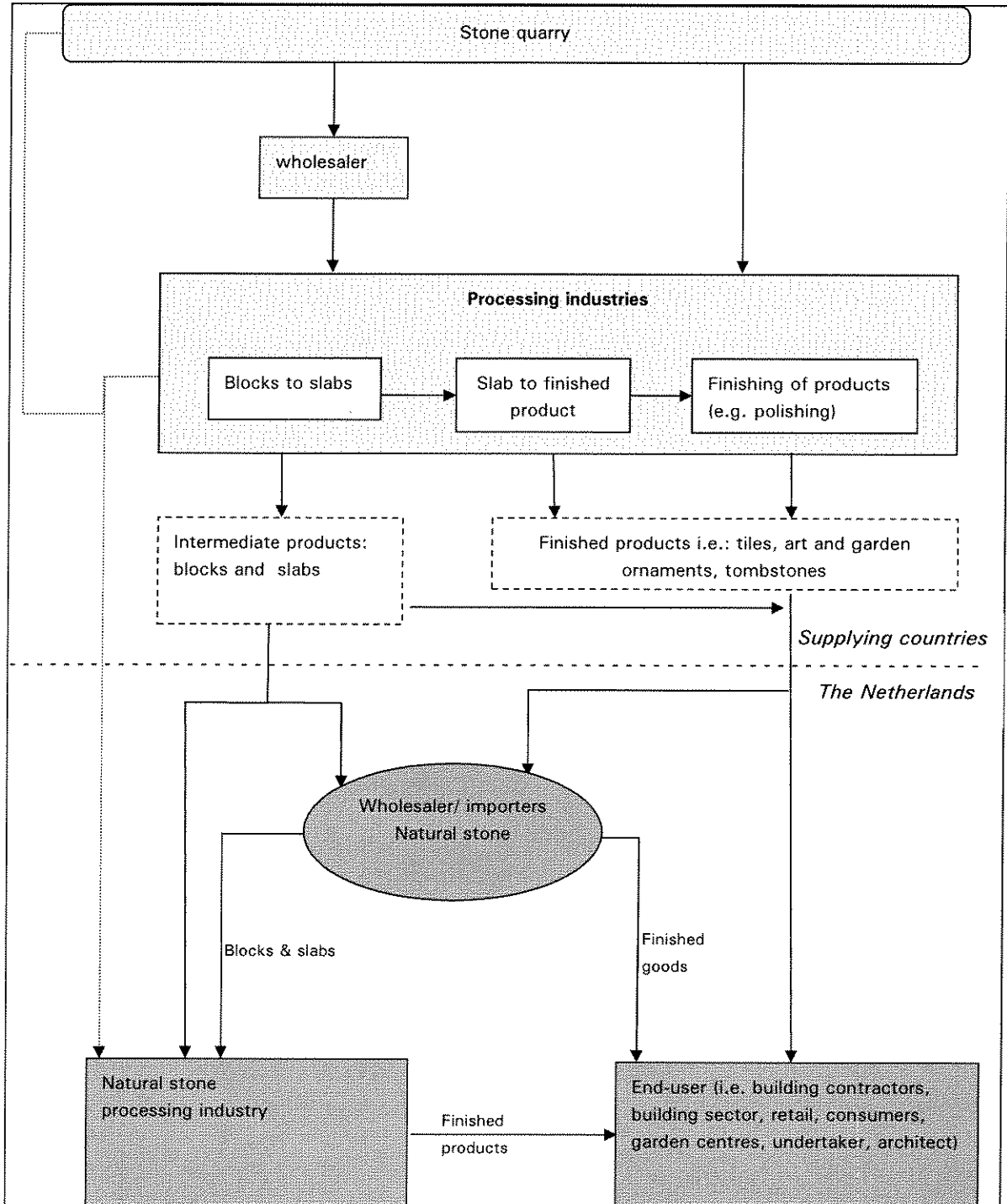
1. Quarrying of blocks
2. Transport (on site, local, and international)
3. Blocks sawed into slabs or tiles (no tiles out of slabs)
4. Finishing the surface of slabs or tiles (shiny, rough, smooth, and even)
5. Transport (on site, local, and international)
6. Tailoring of slabs and monuments (windowsills, gravestones, kitchen countertops)
7. Transport
8. Fitting and installing natural stone products

Slate and quartzite

1. Quarrying of slate and quartzite
2. Transport
3. Splitting/sawing 'blocks' into slabs, tiles, flagstones etc
4. Transport
5. Fitting and installing natural stone products (for example floors)

The operations performed at the Dutch end of the chain include: transport by importers/intermediate trade, processing (sawing, cutting, polishing, decorating or otherwise worked), fitting of materials, distribution and sales (step 5 to 8, or 3 to 5, depending on the material). However, the trend is that

Figure 6: International natural stone product chain and trade structure



increasingly finished products are imported into the Netherlands.⁹

Figure 6 depicts the natural stone chain and its accompanying trade structure, showing both the product chains and the trade lines between the Netherlands and supplier countries, including India.

Figure 6 shows that Dutch companies do business both with stone quarries directly and with the stone processing industry, with the latter counting as the more important trading partner. In addition to the wholesale trade, the natural stone-processing industry also imports natural stone products from abroad. This is becoming an increasingly common practice (also see paragraph 2.5: 'Trends').

The building industry may also import natural stone products¹⁰ directly, depending on factors as type of stone, order size and time frame.

In the following sub-paragraph, the various actors within the Dutch market are described in more detail. In paragraph 2.2, natural stone extracted from India and consumed in the Netherlands is dealt with specifically.

2.1.1 Wholesale/importers of natural stone and natural stone products in the Netherlands

There are approximately 50 wholesalers/importers of natural stone and natural stone products in the Netherlands, although - according to a Dutch stone trader who was interviewed for the purpose of this report - trade lines are becoming increasingly diffuse. Only a limited number of wholesalers can be characterised as large (see table 7). These wholesalers import and distribute both semi-fabricates and finished products. Importers can be roughly divided into two groups: importers catering to the construction and building (materials) sector and importers catering to the funeral industry. The construction and building materials sector includes everything bar products for the funeral industry (e.g. tombstones, gravestones, urns).

Table 7: Leading wholesalers of natural stone in the Netherlands

Sector	Wholesaler
Building sector (also garden ornaments)	[REDACTED]
	[REDACTED]
Funeral industry	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]**

* In 2005, [REDACTED] purchased [REDACTED], a large importer of natural stone.

** [REDACTED] is also involved in retailing activities, through its subsidiary company [REDACTED]

One wholesaler estimated that the two wholesalers catering to the building materials market account for some 30 percent of total imports and distribution of natural stone products. The four large importers catering to the funeral industry jointly also account for a market share of approximately 30 percent. These figures must be interpreted with extreme caution, as they are uncorroborated estimates of stakeholders.

Wholesalers engage in business-to-business activities. The main customers of semi-fabricates (blocks and slabs) are the natural stone-processing industry, as well as building and construction contractors

⁹ Depicted by the shaded grey section in figure 6.

¹⁰ Including stones, floor tiles, curb stones, etcetera.

and developers. The main customers of finished goods are garden centres, retailers in the interior design sector (kitchens, floors), tilers and undertakers.

In addition to wholesalers, who only import and distribute natural stone and natural stone products to the two sectors listed above (building materials and funeral industry), there is a third flow of natural stone products destined for the frontage (or commercial and industrial) building sector. The large companies engaged in frontage construction handle the import of mostly semi-fabricates themselves.

In the Netherlands, there are three large companies involved in the frontage building sector:

- [REDACTED];
- [REDACTED];
- [REDACTED]

A fourth distinctive flow consist of large projects for local, regional or national governments, including large-scale paving projects (in the public domain) or public utility building (e.g. floors, windowsills). For projects requiring building materials (i.e. natural stone) in large quantities, it is not uncommon for the contractors or architects in charge of the project to do business with suppliers directly in order to avoid intermediate trade margins. There are also companies that specialise in public paving.¹¹

2.1.2 Processing of natural stone in the Netherlands

The natural stone processing industry in the Netherlands mainly consists of small to medium-sized companies engaged in the processing of natural stone, i.e. stonemason's yards. The Dutch natural stone processing sector is characterised by a large share of small suppliers with a relatively modest turnover. There are approximately 700 small-sized companies, of which:

- 450 small companies with up to 5 employees;
- 170 medium sized companies with up to 21 employees;
- 80 large companies with more than 21 employees.

The sector offers employment to some 3,200 persons.

In general, the vast majority of companies in the natural stone processing industry obtains its input (semi-finished products, i.e. slabs or blocks) from the wholesale trade. Semi-finished slabs are usually polished on one side. Processing activities include polishing, carving, decorating and cutting to size of the natural stone (product).

In addition to the large number of small-sized stonemason's yards, there are a few large companies engaged in the funeral sector, such as [REDACTED]¹². These large companies (may) also import part of their input directly from factories or quarries abroad. As mentioned in the previous sub-paragraph, companies engaged in the frontage sector also stand out as a subgroup importing a large share of its natural stone inputs directly from factories (and on occasion from quarries) abroad. But in the last few years, an increasing number of small-sized companies has also begun to import sometimes minor, sometimes more substantial shares of its input directly from factories producing semi-finished products.¹³

Leading customers of natural stone-processing companies include the building materials industry, the funeral sector, the retail sector (e.g. undertakers, garden centres, specialised interior design shops) and the consumer market.

¹¹ http://www.sitevandeopenbareruimte.nl/pages/bestrating_bedrijven.asp lists names of companies specialised in this line of work.

¹² Very recently [REDACTED] has gone bankrupt, indebted for € 5.5 million. "Grafstenen: nu kant en klaar bestellen in China", De Volkskrant, 26 July 2006. As of 21 August 2006, the company is continuing with a different owner under the name [REDACTED]

¹³ Further explained in paragraph 2.5 on 'Trends'.

2.1.3 Retail

The most important sellers of natural stone products in the retail sector are the interior design sector, undertakers and garden centres. Interior design companies trading natural stone products¹⁴ generally form the more specialised end of the market, as natural stone is a complex and specialised product. For example, DIY stores sell (nearly) no natural stone products, because the average DIY enthusiast lacks the necessary skills to, for example, put in a natural stone floor or otherwise handle natural stone products. However, the more specialised DIY centres, such as the 'Bouwcenter' outlets, do sell natural stone products.

2.2 Market segmentation and consumption of natural stone and natural stone products

The previous paragraph indicates that four key market segments of end-users of natural stone and natural stone products may be distinguished:

- natural stone processing industry;
- building industry¹⁵;
- funeral industry;
- retail (consumer market).

In general, the natural stone processing industry only uses semi-finished products as input, whilst the other industries use mostly finished products as input.

The market share (consumption) of these individual sectors is difficult to quantify as there are but few figures available. These include figures for the processing industry, but these only comprise yearly turnovers. The total industry's aggregate turnover totalled roughly € 400 million in 2004, including both the turnover of wholesalers, approximately € 40 million, and the turnover of processing companies', amounting to approximately € 360 million. The building industry accounted for 45 percent of the total, memorial monuments for another 45 percent, and restoration activities for the remaining 10 percent (ABN, 2005). Approximately 70 percent of the natural stone-processing industry's output is allocated to the consumer market, and 30 percent to non-consumer markets. Only an estimated 5 percent of the natural stone processing industry is involved in utility building (Centrum Natuursteen, 2005).

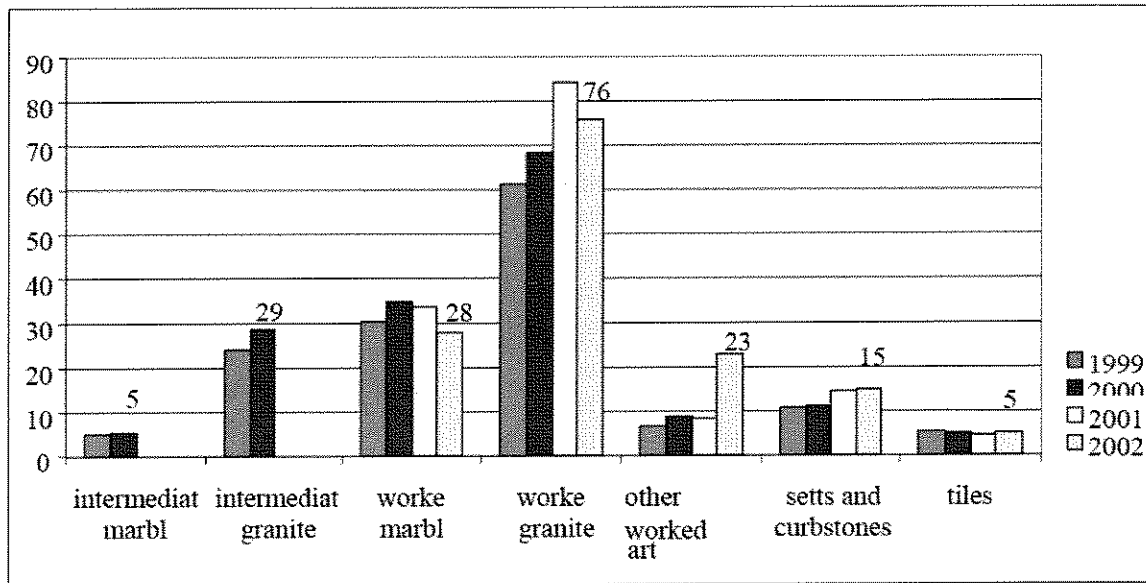
The World Marketing Handbook Stone 2003 indicates that the Netherlands consumed 8,470 tonnes of natural stone in square meters in 2001, and 7,160 thousand tonnes in square meters in 2002, which amounts to approximately 1 percent of world consumption in 2002 (CBI, 2004). However, it fails to explain how this figure was derived and which categories of natural stone were included.

Compilation of Eurostat's data on imports, production and consumption results in the figures listed in figure 7. The categories given are based on the EU's PRODCOM-classification (see paragraph 1.1).

¹⁴ Including floors, kitchens, fire places etc.

¹⁵ Products sold in the building industry include all variations of natural stone floor and wall tiles for interior design and exterior coverings; custom-made products, including kitchen countertops, balustrades, fireplaces, windowsills, doorsteps and fountains; garden and landscape construction elements such as tiles and flagstones; and street furniture, including sets, curb stones, and frontages.

Figure 7: Estimated* Dutch consumption of natural stone products 1999-2002 (millions €)



Source: Eurostat 2003

* consumption = production + import - export (CBI, 2004)

Figure 7 implies that Dutch consumption of worked granite and marble decreased in value between 2001 and 2002. Other worked artefacts, sets, curb stones and tiles show a slight increase in consumption.

2.3 Case India - the Netherlands

The aim of this study is not only to provide insights in the imports of natural stone and natural stone products into the Netherlands (and the EU), and in the Dutch natural stone sector and (international) product chain as dealt with in the previous paragraphs. In addition, one of its key objectives is to highlight the trade and product chains which exist between the Netherlands as a consumer country and India as a supplier.¹⁶

This paragraph deals specifically with those sectors and products in which stone originating from India is being used and with the stakeholders involved in trade with India.

Import figures show that in terms of import volume and value granite is the most important type of stone derived from India, both in semi-fabricates (slabs) and in final (worked) products (paragraph 1.4.2, table 6). Granite is used in memorial monuments, ornamental art (funeral industry) and articles including windowsills, doorsteps, countertops and frontages.¹⁷ Figures on the distribution of natural stones from India among the different sectors or products are unavailable. However, most of the natural stone from India is likely used in the funeral industry (Centrum Natuursteen, 2005). Slate and sandstone, two other types of stone imported from India, are mainly used in floors, for which the consumer market is the largest customer (Oprey, 2005).

It is impossible to estimate the proportion of (Indian) natural stone used in the public sector, also because large-scale projects tend to bypass the natural stone processing industry and wholesalers of

¹⁶ Import figures for India as a supplier country and the Netherlands as a consumer country are listed in paragraph 1.4.2.

¹⁷ Consumer market and public sector.

natural stone. As indicated previously, natural stone is often imported directly by contractors, architects, or even local authorities. The general impression gained from stakeholder consultations is that most of the natural stone from India is destined for the consumer market, in gravestones or interior design building materials (floors, kitchen tops).

The most commonly used types of stone in the Netherlands are listed in table 8. Note that these are stone types much in demand with consumers for articles such as kitchen counter tops, sinks and floors. These stone types do not correspond with direct imports by wholesalers, other (large) Dutch (building/contractor) companies or local authorities. Important categories such as funerary products (gravestones, etc) or large direct imports, which often derive from China, are not included in this table.

Table 8: Commonly used natural stone materials in the interior design sector (retail); wholesale and funerary industry, etc. not included

Commonly used natural stone materials (by volume, in decreasing order)	
Black slate, Jaddish, Seville green	slate from Brazil
Fevi stone, Peacock, chakor	phyliet from India (slate)
Kashmir white , silver white	gneiss from India (granite)
Mint	calcareous sandstone from India
Multicolour Red	migmatite from India (granite)
Nero Africa, rustenburg, Impala	gabbro from South Africa (granite)
Paradiso bash	migmatite from India (granite)
Kotah stone, Tandur	slate from India
Lila gerais	gneiss from Brazil (granite)
Multicolor Verde, kuppam green, verde marina	paragneiss from India (granite)

Source: Centrum Natuursteen, 2004

Seven out of the top ten stones used in retailing catering to the interior design sector originally derive from India. Of these stones, granite constitutes an important category (six out of seven are granites), which corresponds with the import figures as presented in paragraph 1.4.2. Figure 7 shows that in terms of import volume, granite is by far the most important type of stone derived from India, both in semi-fabricates (slabs) and final (worked) products.

Table 9 below provides a list of stakeholders engaged in importing or processing natural stone and natural stone products from India in one way or another. It should be noted that identification of these stakeholders took place through desk research and in some cases personal consultation. It concerns a non-exhaustive list of relatively large stakeholders important to the sector. Due to the small-scale character of the natural stone sector, it was not possible to consult all potential stakeholders in person to verify their connection with natural stone from India.

Furthermore, the classification is somewhat artificial in the sense that the trade lines are sometimes diffuse, as large processing companies frequently also act as (partial) importers of natural stone. As a result of vertical concentration, a stakeholder may fulfil more than one link in the chain.

Table 9: Relevant stakeholders in the Dutch natural stone sector in connection to natural stone originating from India

Type of stakeholder/ Sector	Sector focus	Stakeholders
Importers/ Wholesalers	Building sector (also garden ornaments)	[REDACTED]
	Funeral industry	[REDACTED]
Processing industry	Funeral industry	[REDACTED] several stores e.g. in Meppel, Drachten [REDACTED]
	Interior design industry	There are hundreds of small to medium scale stone cutters that may work with natural stone from India: [REDACTED] provides a extensive list of these companies
	Frontage sector**	[REDACTED]
Retail	Companies specialised in interior design (floors, kitchens etc.)	numerous
	'Do-it-yourself' -stores	[REDACTED]
Public paving	Public sector	http://www.sitevandeopenbareruimte.nl/pages/bestrating_bedrijven.asp : site providing names of companies engaged in public paving, including companies specialised in natural stone, for example [REDACTED]

* Has recently shifted to purchasing natural stone from China instead of India.
** Also acts as a (partial) importer of natural stone.

2.4 Other parties relevant to the Dutch natural stone sector

2.4.1 Relevant trade associations

Trade associations relevant to the natural stone sector are:

[REDACTED] is a trade association for wholesalers of natural stone in the Netherlands. The [REDACTED] started out with 13, and has currently eight members, including the larger wholesalers. Coverage is estimated at ten to fifteen percent of all Dutch natural stone traders. The association engages in collective marketing and public relations activities, and focuses on improving suppliers' market position. See: [REDACTED]

[REDACTED] The [REDACTED] is a trade association for natural stone processing companies, representing employer interests. Membership is voluntary. The

lists about 200 members out of some 700 potential members (both stone processing and trading companies), which constitutes a 25 percent coverage. See:

is a trade organisation of natural stone companies resorting under the or the trade organisation for artisanal trades. The organisation represents the interests of companies (employers) and staff employed in the natural stone processing industry. The following activities/services are provided by the trade organisation's different committees/service desks:

- strengthening management and quality of natural stone processing companies;
- techniques, information service and product promotion of natural stone;
- education and training;
- occupational health and environmental care;
- execution/implementation of collective bargaining agreements.

The , i.e. the , one of the organisation's sub-committees, focuses on the promotion of the natural stone sector and provision of information. This committee consists of two representatives from employers organisations and two trade union representatives .

or ¹⁸, also linked to the artisanal trade organisation, focuses on education, training, occupational health, safety and labour issues for employees in the natural stone sector.

See: <http://www. nl/cms/publish/content/showpage.asp?pageid=4549>.

Other associations which (may) have membership segments associated with the natural stone sector include:

- the ();
- the ;
- the ();
- the);
- the .

This list is not exhaustive: there may be other relevant associations not mentioned, such as trade associations covering the interior design sector.

2.4.2 Role of the government as contractor

Given the research time frame, it proved impossible to come up with an estimate for the share of annual import flows of natural stone originating from developing countries (and in particular India) being used in public spaces or public construction efforts in the Netherlands.

Interviews with stakeholders showed that it is not uncommon for local governments to purchase natural stone materials for public projects directly, instead of through the contractor involved in the project. This means that local governments in some cases (should) be in the know regarding the origins of the natural stone used, and (could) have some insight in the chain of production as a whole. Clearly, when local governments engage in direct purchasing, the product chain is shorter than when contractors purchase the necessary materials on behalf of local governments¹⁹. Local governments

¹⁸ <http://www. nl>

¹⁹ Public projects can be divided in utility construction and 'public space'. Public space includes plazas/squares, public garages, walls of public buildings. Utility building encompasses public buildings as city halls.

obtain stone either from suppliers in the Netherlands (see also paragraph 2.1.1), or by buying it abroad, directly from the stone processing factories or sometimes even from the quarries.

Architects also play an important role in the choosing and purchasing of natural stone.

Natural stone procured by local authorities is processed by the contractors awarded the project contracts. The city of Arnhem for example, purchases 98 percent of the natural stone used for public construction directly from Dutch suppliers specialised in public paving, without going through a contractor.

The Dutch national government subcontracts all public construction projects (utility building and public space). The *Rijksgebouwendienst* (RGD), or Government Building Agency, is a governmental body that provides accommodation for government departments, independent administrative bodies and international organisations. The RGD also advises other governmental agencies and ministries dealing with utility building issues.

Another public institute dealing with construction issues is the *Dienst Weg- en Waterbouwkunde* (DWW), or the Road and Hydraulic Engineering Institute. This institute is a part of *Rijkswaterstaat*, the Dutch Public Works Department. DWW is an advisory body for national policies on building materials and alternatives relating to projects in the public domain. For example, crushed rock (natural stone) may serve as an alternative for grit.

2.5 Trends

This paragraph briefly describes trends relevant to the Dutch (and global) natural stone markets. These trends may be subdivided into:

- consumer preferences;
- product-related developments;
- consumption and market-related developments;
- price-related developments;
- distribution channels;
- regulations.

2.5.1 Consumer preferences

Some important key words are: taste, media influence, individuality, life style, price.

When it comes to taste, consumer predilections influence the amount, type and therefore partly the country from which the natural stone is imported (certain types of natural stone are only extracted in certain countries or regions, for example Norwegian slate or dark green marble from India). The media (e.g. life style magazines, magazines for interior decorating and television programmes on interior design) exert a growing influence on taste, causing consumer preferences to change at an increasingly rapid pace over the past few years, sometimes varying every six months.

Society and therefore taste is becoming increasingly individually defined, with consumers demanding more variety and diversity. A large stakeholder in the funeral industry said they expected the funeral market to polarise: on the one hand, there tends to be an increasing demand for 'mass produced tombstones' (similar size) from developing countries due to declining prices; on the other hand an increase in tailor-made tombstones needing craftsmanship.

Natural stone in general or a particular type of stone is or can be associated with a certain lifestyle. In general, natural stone is associated with being (too) expensive and 'only for the rich'. Although the general perception regarding natural stone has already changed somewhat, the natural stone sector has recently launched a campaign to convince consumers that natural stone is there for everybody. Natural stone is also associated with durability and sustainability. It is perceived as a sturdy material with a long lifespan. In an article on natural stone in an interior design magazine natural stone a connection with 'environmentally friendly' was easily made.

Although interviews with stakeholders and the available literature show that Dutch consumers are fairly price sensitive and that product price is the leading purchase motive, other sectors and developments imply that there is room for higher priced sustainable products, for example in the organic market, which is still expanding its market share.

(Re-)styling and decorating gardens and houses continues to gain in importance. This may create room for a greater diversity of products, including 'sustainable' natural stone products.

2.5.2 Product developments

Over the last decade consumer demand for natural stone has increased. The Netherlands has 'discovered' natural stone products as an alternative building material. Traditionally, Dutch consumers are not accustomed to the use of natural stone, as it is hardly produced locally.

The technology for extracting and (in particular) processing of natural stone has improved tremendously. This has led to an enormous expansion (globalisation) and diversification of the market of natural stone, which now reaches a far larger share of consumers.

Consumer preferences are changing and becoming more individual, leaving more room for niche markets.

2.5.3 Consumption and market related developments

Performance of the natural stone sector is strongly linked to the performance of the building and construction sector, which in turn has a strong correlation with economic growth. For the past two years, because of a stagnating economy in the Netherlands and other EU countries, the natural stone market was faced with a deflated demand. Parallel to this development, the Netherlands and other EU countries were confronted with increased competition and expanding supply from developing countries due to technical innovations in the quarrying and processing industry and developing countries' increased access to this technology. In the short term, a status quo or a further slowing-down of the (Dutch) construction sector is expected.

The share of 'traditional' stone producing countries such as Italy and Spain in the global natural stone market is steadily declining, whereas the share of developing and newly industrialised countries is growing strongly. Traditional countries cannot compete with cheap labour countries like India and China. The production of mass products (processing of natural stone in finished products) in particular is shifting towards developing countries.

Imports of finished natural stone products are experiencing a relative increase both in the EU and in the Netherlands due to price developments and availability (see the next paragraph).

2.5.4 Price-related developments

The price of natural stone and natural stone products has decreased considerably in developing countries due to the aforementioned technical innovations in the quarrying and processing industry, better access to this technology, the low cost of labour and increased competition between developing countries. This has led to a significant decrease in the price (per m² or piece) of natural stone and natural stone products originating from developing countries, which have subsequently 'flooded' the global, EU and Dutch markets. In comparison, the price of EU natural stone, for example Norwegian slate, has not altered much over the past few years.²⁰

2.5.5 Distribution channels

Developing and newly industrialising countries are becoming increasingly important suppliers of natural stone and natural stone products for the Dutch (and the EU and world) markets.

Processing of natural stone increasingly takes place in developing countries.

Over the past few years, China has experienced a tremendous increase in the quarrying and in particular the processing of and trade in natural stone products. The country is expected to become the trade centre of the global natural stone market. China already imports 'raw' or semi-processed natural stone materials (e.g. blocks and slabs) from important global producers and exporters of natural stone products, including not only countries like India, South Africa and Turkey, but also Italy. These semi-finished inputs are further processed into finished goods in China, whence they are subsequently distributed worldwide.

The position of wholesalers in the Dutch natural stone market is under pressure. The natural stone processing industry and other industries engaged in natural stone products (funeral industry) are increasingly doing business directly with factories processing natural stone (or stone quarries) abroad. A few large importers of natural stone and natural stone products have gone bankrupt in the last few years (Latiers BV, for example, a large player in the funeral industry).

2.5.6 India-specific trends

Over the last decade, the Netherlands has been importing stone and natural stone products directly from India, instead of purchasing stone of Indian origin via Italy and Spain. This can be explained by the fact that developing countries including India have begun processing natural stone themselves.

In the last few years, China has become a more important trading partner than India. Its product prices are lower and 'doing business with China is better, as they always keep their end of the bargain; with India one never knows when they'll deliver'.

²⁰ As indication: Norwegian slate is 116 euro per m²; slate from India 26 euro.

Chapter 3

CSR issues in the quarrying and processing of natural stone



This chapter presents the results of the sustainability analysis²¹ of the quarrying and processing of natural stone in India and discusses key issues which surfaced in the course of the study.²² Although the focus is on India, many CSR (sustainability) issues surfacing in quarrying and processing tend to be illustrative for the quarrying and processing situation in developing countries in general. On the other hand, certain sustainability issues are not so much specific to the natural stone industry as such, but rather either specific to India (e.g. caste issues) or to (certain) developing countries in general (e.g. child labour).

This chapter touches on the following topics:

- general overview of the natural stone industry in India;
- description of production activities;
- general overview CSR issues related to the natural stone industry;
- CSR issues in quarrying;
- CSR issues in processing.

3.1 Natural stone industry in India

Together with China and Italy, India was one of the most important producers and leading exporters (in terms of tonnage) of natural stone world wide over the past decade.

India traditionally exports large quantities of raw blocks, rough slabs and standard tiles.²³ Of late, gravestones have become an (increasingly) important export product. In terms of stone type, India is world export leader in limestone and sandstone slabs (Stonereport, February 2004). Also, India is a global leader in terms of granite exports: Indian stone exports comprise mainly granite cut blocks, granite slabs and tiles (<http://www.cdos.com>, 2005).

On average over ten percent of the natural stone traded on the world market comes from India. The annual export growth rate has been around 10 to 15 percent over the last decade, although in the past two years the export role of India has stagnated somewhat due to the rise of China.

²¹ Based on desk research, i.e. internet search and a limited number of interviews (by letter) with stakeholders within the industry and other stakeholders (research organisations, environmental organisations, human rights organisations) outside the industry. Please note that additional fieldwork is advisable to complement the desk research and verify certain findings.

²² When possible and relevant, the researchers distinguished between stone types which are important in terms of trade between India and the Netherlands, i.e. granite, marble and sandstone.

²³ Natural stones, i.e. granite, marble, sandstone for example, are categorised by the Indian government as 'minor minerals' and thus fall under the jurisdiction of the respective State authorities. Therefore, precise data on the production and reserves of natural stone in India are not available. However, estimates have been made in some cases, although data at times vary considerably.

India's market presence notwithstanding, quarrying operations in the country may on average be characterised as relatively small in scale, with a low level of mechanisation and labour intensive. Quarrying operations are regularly unorganised and of informal nature. However, the trend over the past decade has been one of mechanisation and modernisation (Lahiri-Dutt, 2003).

Granite

India accounts for over 20 percent of the world's resources in granite. Granite reserves are estimated at over 1,690 million cubic meters according to CDOS India (Kumar & Singh, date unknown). Another source mentions granite area reserves (in the year 2000) of an estimated 42,916 million cubic meters, with black granite accounting for 6.7% of total reserves and coloured granites comprise 92% (MMP India organisation, 2005).

Granite extraction and production mainly takes place in the south of India (Tamil Nadu, Karnataka). As an indication: In 1997-98, Tamil Nadu accounted for 30 percent of India's granite production Karnataka for 27 percent and Andhra Pradesh for 24 percent, while Uttar Pradesh and Rajasthan – in the north of India – accounted for only 9 percent and 4 percent respectively (TERI institute, 2001).

Sandstone

Sandstone reserves are estimated at around 1000 million tons, with approximately 90 percent of the deposits located in Rajasthan (Kumar & Singh, CDOS).²⁴ Madhya Pradesh is the second largest source of sandstone in India.²⁵ In addition, there are some sandstone quarries in Gujarat, Orissa, Karnataka, Tamil Nadu, Andhra Pradesh, Assam, Meghalaya, and the Andaman and Nicobar Islands (K. Vikram, "The sandstone industry in India", no date; <http://www.mineralszone.com>, 18 April 2005).

Slate

Slate deposits in India are estimated at around 500 million tonnes. Deposits are found in Rajasthan, Haryana, Himachal Pradesh, Andhra Pradesh and Madhya Pradesh.

Marble

Marble reserves in India are estimated at 1200 million tonnes, with Rajasthan accounting for 91 percent of the total Indian reserves (Kumar & Singh, CDOS, 2005).²⁶ MMP India quotes an inventory survey of India Bureau of Mines (IBM), which estimates that in-situ reserves of marble as on January 2000 approximated 31 million tonnes of proved reserve, 28 million tonnes of probable reserve and 1,504 million tonnes of possible reserve.

Although precise data on production figures do not exist, 95 to 99 percent of marble production is estimated to take place in Rajasthan. Overall, Rajasthan is estimated to account for approximately 65 percent of India's natural stone production. Box 1 presents some figures on the size of the natural stone industry in Rajasthan.

²⁴ Sandstone producing districts in Rajasthan include: Karauli, Dholpur, Bharatput, Kota, Bundi, Bhilwara, Chittaurgarh, Nagaur, Jodhpur, Madhopur, Bikaner, Sawai, and Bijolijan.

²⁵ Locations of sandstone quarries in Madhya Pradesh include the following towns and villages: Shivpuri, Lalitpur, Bilaspur, Damoh, Indore, Nimar, Rewa, Raigarh Satna, and Shahdol.

²⁶ Important regions of marble deposits in the state include:

- Udaipur – Rajsamand – Chittorgarh region;
- Makrana – Kishangarh region;
- Banswara – Dungarpur region;
- Andhi (Jaipur) – Jhiri (Alwar region);
- Jaisalmer region (MMP India, by email, 2005).

Box 1: Size of the natural stone industry in Rajasthan: some figures²⁷

- Over 3600 marble mining leases with a production of 4.28 million tons in 2000-2001.
- About 1100 marble processing units and 50 automatic tiling plants with a marble slab processing capacity of 1,000 million square feet. Per annum and marble tiling capacity of 300 million square feet per annum.
- About 530 granite-mining leases with a production of 50 thousand tons in 1999-2000.
- Granite slab processing capacity of 15 million square feet. Per annum and granite tiling capacity of 50 million square feet per annum.
- Immense deposits of sandstone accounting for a production of 8.37 million tons in 1999-2000 from over 1700 mining leases.
- Enormous flaggy limestone (Kotahstone) deposits with an estimated production of 1.62 million tons in 1999-2000.
- Vast potential slate deposits accounting for a production of 12,000 tons in 1999-2000.
- The natural stone industry in Rajasthan generates employment for some 500,000 people.

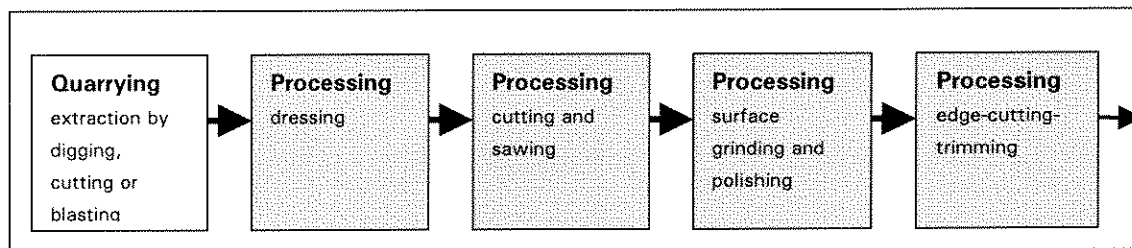
3.2 Description of the natural stone production process

This section provides a general description of the production of natural stone in India. Granite, sandstone and marble are extracted through open excavation or so-called 'open pit' quarrying (K.Vikram, no date). Below, production processes are discussed in more detail.

Granite

In figure 8 the granite production chain and various production processes (depending on the product) are depicted.

Figure 8: Granite production chain and related processes



Granite, sandstone and marble extraction (quarrying phase)²⁸

Granite is extracted through open excavation (open pit mining).

The quarrying of granite involves two important stages of operation:

- Actual block splitting either from sheet rock or boulder. This is done either by digging, cutting or blasting processes using explosives.

²⁷ Source: MMP India, email April 2005.

²⁸ Sources amongst others: [redacted] MLPC, email 22 April 2005, MMP India, email April 2005, TERI report No. 2001EE42.

- Further activities involving different items of work, such as removal of weather-beaten zones or overburden, opening up of rock faces, lifting of cut blocks, transportation and other ancillary work (email MMP India, April 2005).

Work in the granite quarries is mainly performed manually. In some cases semi-mechanised methods are used for lifting, cutting, and transportation. There are only a very limited number of quarries that use modern technologies for block splitting, such as flame jet burners and wire saws for cutting, compressors and drilling machines for drilling and blasting, cranes for lifting big blocks, and dampers and trucks for transport. For drilling and channelling, hand chisels and hammers are the most frequently used tools, even though granite quarrying is characterised by the production of blocks of considerable size and weight.

However, another source maintains that many quarries do deploy mining machinery nowadays (<http://www.granite-sandstone.com>). This seems plausible, as one of the reasons that developing countries have increased so much in importance as supplier countries of natural stone worldwide at the expense of traditional European countries is the access to and possession of advanced technology (see chapter 1).

Manual operations

- First, overburden is removed (digging);
- then block or slab is extracted (drilling and channelling, using hand chisels and hammers);
- block or slab is split manually;
- block or slab is loaded into trucks manually.

Mechanised operations

- First, overburden is removed (blasting);
- block or slab is extracted (drilling, using compressors and drilling machines);
- block or slab is split using (semi-)mechanised techniques;
- large blocks are loaded into trucks by cranes.

As granite is an important export good and therefore a considerable 'foreign exchange earner', some parties believe that it should be reclassified as a 'major mineral'. Policy on major minerals is determined by the national government, whereas minor minerals are left to local state authorities. Reclassification would thus facilitate the development of a uniform central policy. A first step in this direction has been the formulation of the Granite Conservation and Development Rules in 1999, which seek to establish a uniform policy for granite development, exploitation and conservation (TERI report, 2001).

The production of sandstone and marble also takes place through open excavation (open pit mining). The quarrying of sandstone is relatively more mechanised than granite quarrying. However, many sandstone quarries are small in size and use manual work only, deploying the same techniques as in manual granite quarrying (<http://www.granite-sandstone.com/indian-granite-industry.html>, 25 April 2005).

The quarrying of marble also tends to be more mechanised than granite quarrying and features quarries that are semi-open pit, in the sense that they reach depths of up to 350 feet.

Granite, marble and sandstone processing

A substantial part of natural stone quarried in India is processed within the country, often close to the quarrying site or in the same state.²⁹ But accurate figures on the share of raw materials processed domestically could not be obtained. Part of India's raw stone production is also exported to third countries for further processing, notably to China.

In the past, all processing was done by hand, but this appears to be no longer common practice.³⁰ Modern granite cutting factories have been set up in India, using the latest technology from Italy (Litosonline.com, no date). On the other hand, some sources suggest that manual processing also continues to this day (Hindustan Times, 2005).

The following stages may be distinguished in the processing of granite, marble, sandstone and similar stones into tiles (<http://www.granite-sandstone.com>):

1. dressing;
2. cutting/sawing (also called 'calibration');
3. surface grinding and polishing;
4. edge-cutting-trimming.

On occasion, this process may be followed by sand blasting or brushing.

3.3 Value chain

This section seeks to sketch a typical natural stone product value chain. However, the limited research time available made it impossible to gather the necessary information to calculate the various costs and profit margins of each production phase.

Instead, (current) retail prices in the different stages of the production chain³¹ and the general costs in each production phases³² have been used. Figure 9 shows price development in the processing stages of granite floor tiles.

Prices/values of natural stone products must be seen as indicative and interpreted with caution, as:

- the range of natural stone products deriving from different types of stone each requiring different types of processing operations (cutting, sawing, polishing, carving etc) is extensive;
- prices are set in individual deals and contracts between suppliers and buyers (individual product prices are often lower within large orders for example);

²⁹ In the case of sandstone, for example, a small part of the quarried stone - typically 5% or less - is directly processed into dimensional stones at the quarry site itself. In addition, stones are processed in local specialised processing plants. A mechanised processing plant may process various types of stones - such as granite, marble and sandstone - using the same machinery, as the cutting and finishing process of these stone types is similar (Signups, 2005). A company like the ██████████ in Rajasthan, for example, processes all types of natural stone suitable for tiling, including granite, sandstone and marble.

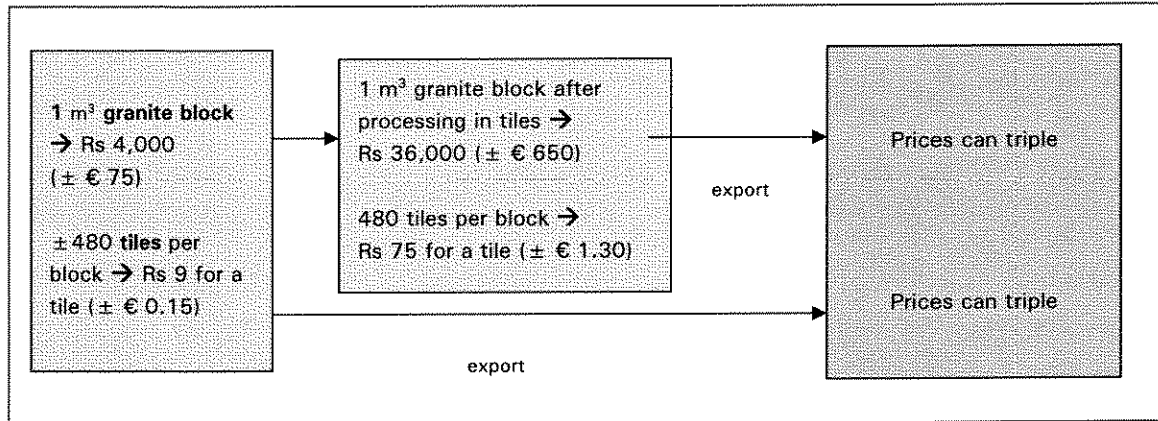
³⁰ The unloading of stones and dressing is usually done by unskilled workers under a skilled supervisor. Granite and other stones are cut into thin slabs by multi-blade gang saws. Alternatively, granite blocks are cut into tiles by large tile saws with industrial diamonds on the saw tips. The sawing process produces extreme heat that may damage the saw tips. Therefore, large amounts of water are used to cool the blades. Steel abrasives are also used for stone cutting. Slabs may have a thickness of for example 10 mm. The slabs are further cut into strips. The strips are cleaned and calibrated to remove all wet saw dust and saw marks. The strips are cut into tiles. Tiles in special colours are produced to order. These tiles are then polished and calibrated using specialised equipment, the polishing and calibration settings can be adjusted to individual customer requirements. The finished tiles are visually inspected. Cutting and polishing is carried out by skilled workers. Finally, the tiles are packed in polyethylene and then in wooden crates (for added protection). The most popular tile sizes measure 30 x 30 x 1 cm and 30.5 x 30.5 x 1 cm (12" x 12" x 3/8"). They are packed 10 to a box. A typical container load contains the equivalent of 750 square metres, e.g. between 805 to 835 boxes. These boxes are so heavy that they cannot be loaded onto the trucks manually. Hence, this is always done using cranes. See <http://www.mineralszone.com>.

³¹ Prices for different types of material vary greatly. E.g. the Dutch retail price of slate floor tiles originating from India is € 25/m². Granite tiles are around € 70/m².

³² General costs can be divided into: fixed capital (land and building, machinery, rent); working capital (labour, raw materials, utility costs, other contingency costs); government taxes and rents; transport costs.

- taxes (sales, road tax), dead rents and/or royalties (for lease quarry) and surface rents may vary per state.

Figure 9: Example of (retail) price



Sources: Small Industries Service Institute, "Flooring Tiles (Granite)", January 2003; Centrum Natuursteen, 2005.

3.4 General overview CSR issues

This section *summarises* the most important CSR issues relevant to the natural stone processing industry, based on desk research and a number of interviews by letter assessing the various issues in both the quarrying and processing of natural stone.³³ Sections 3.5 and 3.6 address CSR issues specific to quarrying and processing of natural stone respectively in more detail. Section 3.7 deals with operational aspects of CSR in both quarrying and processing. For each issue, the relevant international standards and/or national legislation are listed.

The issues in India's natural stone industry in India that urgently need to be addressed, include:

Hazardous working conditions in both quarrying and processing. In granite, marble and especially sandstone quarries, workers are exposed to a high incidence of the fatal occupational diseases silicosis and tuberculosis. In non-mechanised processing plants, these diseases are also common. Accidents at work, sometimes resulting in the death of workers, occur frequently in the quarries. Workers are also required to carry very heavy weights, mainly in shallow quarries and non-mechanised plants. Basic safety provisions, such as dust masks, are largely absent. This is a violation not only of universal human rights, but also of the ILO conventions and relevant national legislation.

Several studies suggest that a majority of quarry workers is indebted to the company and works under conditions of **bonded labour**. Companies abuse this situation to keep wages low. Bonded labour is a violation both of the universal human rights of workers and the relevant ILO conventions. Bonded labour is forbidden by Indian law.

³³ Please note that sustainability or CSR issues related to the natural stone sector are subject to differences in interpretation. For example, employment generated by the natural stone sector is generally seen as a positive element, both by individual employees earning a viable income in (according to local standards) acceptable working conditions, and likely by public authorities, for whom (creating) employment opportunities often has high priority. The creation of employment opportunities in itself, however, does not compensate for negative social and environmental impacts. On the other hand, nature conservationists will tend to display a bias with regard to the environmental consequences of natural stone production. In addition, the perception of sustainability of natural stone production will differ from country to country, because of cultural or practical differences. In this light, sustainable natural stone production chains constitute a complex and dynamic concept, subject to different interpretations and elements.

Child labour is common in India's stone quarries. Children tend to start work before the age of 14 and are often made to perform dangerous tasks. The root causes of child labour are acute poverty, the lack of child-care facilities and/or bonded labour. When bonded workers die, their debts are often passed on to their families, including his or her children. These children are then forced to go out to work in order to pay off these debts. Child labour violates the ILO conventions, while labour in stone quarries below age 15 is prohibited by Indian law.

Caste discrimination is a great concern throughout the sector.

Environmental pollution from solid waste disposal by quarries and processing plants is severe and causes severe damage to agricultural areas. Unusable materials are frequently dumped in violation of national laws.

Habitat destruction and land stewardship: quarrying in general leads to habitat destruction. In addition, illegal quarrying occurs in protected habitats. The obligatory restoration, reclamation and rehabilitation of mines, as required by Indian law, is often side-stepped.

Corruption is a feature of all Indian industries, and the natural stone industry is no exception. As a consequence, companies get away with operating illegal quarry leases, and violating labour and environmental laws.

A **lack of record keeping** by quarrying and processing companies underlies the consistent violation of Indian labour laws and makes verification of company practices impossible. The failure to keep written employment registers is in itself a violation of various national laws.

3.5 CSR issues in quarrying

This section describes in more detail the most important CSR issues related to the quarrying of granite and other types of natural stone. These issues are subdivided into socio-economic and environmental issues.

Quarrying activities can affect the social and economic situation of an area and its population in different ways. The section below summarises the key socio-economic CSR issues pertaining to natural stone quarrying. The following issues were identified:³⁴

- impact on (local) economy;
- child labour;
- occupational health and safety;
- working conditions;
- bonded labour;
- caste discrimination;
- tribal (land) issues;
- gender;
- impact on social structure – migrant labour;
- illegal mining.

³⁴ As noted before, certain issues are not necessarily specific to the natural stone industry, but rather to Indian society as a whole (e.g. caste issues) or to developing countries in general (e.g. child labour).

3.5.1 Socio-economic issues

Employment

Quarrying activities generate employment and contribute to a country's gross national product, both through production for the local market and for the export trade. However, it is difficult to establish the sector's precise contribution to local employment and gross national product.

Exact figures on the individual contribution of quarrying to India's gross national product are not available: quarrying and (mineral) mining are estimated to contribute around 2 to 2.5 percent. Their share in the total value of all merchandise exports are estimated at circa 17 percent (various sources, e.g. Chatterjee, Indian Bureau of Mines, date unknown).

In addition, accurate data on the sector's contribution to overall employment in India are scarce or not available. Large numbers of quarry workers are unregistered, which makes it difficult even to come up with reliable estimates.

The sector's factual contribution to the *local* economy is equally difficult to establish, as there is no guarantee that quarrying indeed benefits the local economy and raises welfare standards, as quarries frequently make use of migrant workers.

However, some indication of local employment creation can be given. Data derived from different sources reveal the following trends:

Rajasthan is the centre of the sandstone industry.³⁵ According to Finnish research, the state's sandstone mines offer employment to nearly 2 million people, and over 100,000 people in the city of Jodhpur alone. In Western Rajasthan, the sandstone industry is the largest industrial sector, in terms of the number of people engaged in the trade (Finnish Institute of Occupational Health, article on child labour in sandstone mines, 2002). Another source lists an estimated 20,000 people employed in sandstone quarrying in Jodhpur district, Rajasthan, an area of nearly 250 square km.

Rajasthan is also the focus of India's marble industry. As mentioned before, the state accounts for 95% of the country's marble production.³⁶ In Rajasthan's Nagaur district, an area of approximately 100 square kilometres, some 12,000 to 15,000 people are employed in marble quarrying. Nagaur is one of Rajasthan's main marble producing districts.

A study on sandstone mines in the Nagaur region³⁷ reports quarrying as having a positive effect on the income of mine workers and the local economy. Over the last 20 years, mining villages have undergone considerable changes, notably a major increase in the number and type of shops selling 'luxury' articles such as televisions and the like.

In conclusion, the stone quarrying industry as a whole does generate considerable employment opportunities as it is a relatively labour intensive, under-mechanised industry. However, it is not uncommon for quarries to be owned by entrepreneurs outside the local community, which tends to deduct from the industry's positive contribution to sustainable local economic development³⁸.

Wages

Table 10 depicts minimum wage rates in mining as set by the central government for the period up to September 1999.

³⁵ B. Rabinowitz et al., "Tales of Woe: A report on child labour in the mines of Jodhpur and Makrana" (Jodhpur: GRAVIS, March 2004), p. 7. Department of Mines & Geology website, "Sandstone", http://www.dmg-raj.com/dmg_sandstone.htm, (3 May 2005).

³⁶ B. Rabinowitz et al.

³⁷ Raj, date unknown.

³⁸ Lahiri-Dutt, 2003.

Table 10: Minimum wage rates established by the Central Government for employment in mining until September 1999³⁹

Category of workers	Work above ground			Work below ground		
	Basic wage (Rs)	V.D.A. (Rs)	Total (Rs)	Basic wage (Rs)	V.D.A. (Rs)	Total (Rs)
Unskilled	28.00	18.22	46.22	34.00	22.26	56.26
Semi-skilled	34.00	22.26	56.26	41.00	26.33	67.33
Skilled	41.00	26.33	67.33	50.00	32.37	82.37
Highly skilled	50.00	32.37	82.37	60.00	38.46	98.46

The quarries deploy two types of wage systems - day wages and piece rate wages. Categorisation depends on work efficiency. The daily wages of workers vary from Rs 40 to Rs 200, with over 60 percent of the workers earning 60 to 70 rupees a day (Raj, date unknown).

Most of the work in quarries can be classed as unskilled, except for drilling and blasting and operating machinery like cranes. Drilling and blasting is either done by skilled workers or unskilled experienced workers. Other skilled work is performed by crane operators, compressor operators and hacksaw mechanics. On average, marble quarries have a larger share of mechanised work than granite quarries.

A 2000 study on marble mines in Makrana showed skilled workers were being paid between 60 to 80 rupees a day and unskilled workers 40 rupees. At that time, the prevailing rates in mining as stipulated by the Central Government following the Minimum Wages Act were on average 10 percent higher. In general, most workers engaged in quarrying tend to receive less than the official minimum wage, although there are exceptions (for example, highly skilled workers were reported to earn up to 100 rupees a day, which exceeds the figures from the Makrana marble mines study) (email HEDCON, email MLPC, email MMP India, 2005). The Makrana study further reports that where a highly skilled male worker received around 100 rupees a day, a child worker performing the same work only received 40 rupees. However, due to lack of strength and skills, there are many tasks children can not perform, at least not at the rate and level of adult workers. Other studies confirm that children and female workers are paid less than male workers, but whether this is also the case when they perform similar tasks, remains unclear.

It is hard to accurately assess whether the wages earned by quarry workers can be characterised as living wages in the sense that they suffice to sustain both workers and a modest household in their basic needs and livelihood. However, this may well be doubted, as average pay is usually below minimum wage and a large majority of the workers remain indebted (see also subparagraph on bonded labour). In general, mining (including quarrying) is considered a bad payer: the industry only reserves some 4 to 5 percent of total production costs for labour (email HEDCON, 2005).

Child labour

In India, the definition of 'child labour' applies to a population of working children ranging from age 5 to 14 (the minimum working age sanctioned by law, however, varies from industry to industry). Various sources indicate that child labour in both mining and quarrying is quite common or even widespread in India (and other developing countries).⁴⁰ Unfortunately, a lack of data makes it difficult to produce reliable figures on the number of child workers in quarries.⁴¹

³⁹ "National campaign on labour rights; the trap they dig", CEC et al, 2000.

⁴⁰ An indication that child labour is by no means an uncommon phenomenon in the sector can be derived from the fact that the ILO 2005 World Day against Child Labour was devoted to the mining and quarrying sector.

⁴¹ It must be noted that child labour is common to India as a whole. Child labour is widespread in numerous industries, in particular in the low-tech, labour-intensive informal sectors. According to a recent census, India had 12 million child workers constituting around 5.2% of the total workforce. An official study by the Planning Commission set the number at 20 million children in the year 2000. Other informal studies mention figures of some 100 million child workers in India. Most of these children are employed in agriculture (78%); around 8.5% was engaged in manufacturing and processing (most likely including quarrying).

However, Anti-Slavery International estimates point to roughly one million child workers in India's stone quarries (ILAB report, 2003), including bonded child labour. Several studies found that in some districts up to 15 to 25 percent of the total workforce employed by quarries was made up of children (Finnish Institute of Occupational Health: Child Labour in Sandstone Mines, 2002; ILAB report, 2003). A study on stone quarries in Ghaziabad near Delhi found that 25 percent of approximately 2,000 workers were aged between 10 and 14 years old (Child Right Worldwide; date study unknown).

Children working in stone quarries face health and safety risks from pulling and carrying heavy loads, breathing in hazardous dust and particles and using dangerous tools and crushing equipment (ILO organisation).

NGOs in India are very active on the issue of child labour and the Indian government recognises the existence and acknowledges the problem of child labour. This warrants the conclusion that the industry must be – at least to some extent – aware of the issue, and that individual companies may have a (informal) policy not to employ children. Stakeholders from the Netherlands

indicate that they (almost) never witness child labour on their visits to suppliers (mostly factories) in India. At the very least, this suggests that the Indian stone industry is conscious of the issues concerning child labour, and may take care to hide their under-aged workforce from visitors.

Occupational health and safety

The mining and quarrying sector is traditionally a sector that poses large risks to occupational health and safety. Even in modern quarries and mines, fatal injuries occur regularly ("Sustainability of jewellery sold in the Netherlands", CREM, 2005). The most important occupational risks related to stone quarrying include:

- fatal accidents⁴²;
- physical injuries requiring medical treatment⁴³;
- work-related illnesses: respiratory diseases such as silicosis and tuberculosis due to inhalation of dust.

Work-related illnesses endemic to the natural stone industry include the respiratory diseases silicosis and tuberculosis (or silico-tuberculosis). Large numbers of quarry workers suffer from silicosis or tuberculosis due to prolonged inhalation of silica-dust (from quartz particles), although ready estimates are not available (<http://www.hinduonnet.com>, article 2003).

Silicosis is particularly relevant to the siliceous natural stone industry (granite, sandstone). Dangerous levels of respirable quartz particles (exceeding 0.1 mg/m³) have been reported in many industries worldwide and are most frequently found in, amongst others, granite quarrying and processing as well as in crushed stone and related industries (IARC, 1997).⁴⁴ Geometric mean air concentrations and air concentrations of quartz from personal breathing-zone samples collected during various jobs in the

Box 2: A profile of child labour in sandstone mines

- Most children working as labourers belong to the age group of 10-16 years.
- More than 60% are working as bonded labourers.
- The majority of these children come from scheduled castes or tribes.
- Children usually take care of the instruments used in mining, help in digging and drilling stones and fetch tea and water for other labourers in the mines.
- The average income of children in mines is between Rs 15 en Rs 30 a day.

Source: Tyagi, Asian Pacific Newsletter 2000-2002.

⁴² No formal data could be found on fatal accidents in natural stone quarries, as official monitoring authorities are often absent. However, various sources indicate that fatal accidents are 'common' to quarrying activities. For example, the fact-finding report on marble, masonry stone and sandstone mines in Rajasthan mentioned earlier, states that the number of work-related deaths in Makrana (marble quarries) is very high, due to a disregard for the standard safety procedures as stipulated by the Mines Act and the deployment of unscientific mining methods. On average, one death occurs daily in the Makrana mines ("The trap they dig", CEC et al, 2000-2002).

⁴³ Stone quarrying also has a high incidence of physical injuries requiring medical treatment.

⁴⁴ In the Netherlands for example, the processing of sandstone containing more than 70 percent quartz particles is prohibited altogether, as it is considered too dangerous – regardless of the health and safety measures taken.

granite quarrying and processing industries and crushed stone and related industries in Finland, the USA, and the United Kingdom ranged from 0.03 to 1.5 mg/m³. In India, personal respirable dust levels of 0.06 to 1.12 mg/m³ were generated during the manufacture of slate pencils from natural rock. Average personal dust concentrations measured in previous surveys in 1977 and 1982 were 10- to 100-fold higher⁴⁵. There are many reports of adverse health affects from occupational exposure to quartz, which include silicosis (acute and chronic) and lung cancer.

Another not uncommon occupational hazard in quarrying involves hearing impairment due to long-term exposure to noise. Noise levels are often very high, ranging between 58 to 88 dB from processes such as blasting. Continued exposure to such noise levels can cause serious hearing problems.

There is at least some recognition for occupational health and safety issues by the quarrying industry in India. For example, at a training session organised by the UNIDO International Centre for Advancement of Manufacturing Technology (ICAMT) in 2003, health and safety was one of the issues. In addition, stakeholders in the Netherlands as well as Indian sources indicate that a number of quarries and factories provide protective equipment such as dust masks. However, this is only a minority of quarries and processing units. An additional problem is that workers – out of ignorance – often fail to use the equipment issued. Training is therefore also important to educate workers with regard to occupational hazards and risks.

(Other) labour conditions

On average, working conditions in the natural stone industry can be characterised as poor. Despite national legislation,⁴⁶ medical and sanitary facilities are generally absent and medical insurance programmes are lacking. The average working day ranges from ten to twelve hours and job security is low. And as established in the previous paragraph, there is a high incidence of accidents and other health hazards due to lack of protective equipment and training⁴⁷.

However, there are positive exceptions to the rule. There are companies that provide compensation for fatal accidents to family members, medical services and medical insurance and/or sanitary facilities. For example, some large (sandstone) quarry owners are allegedly providing housing facilities to migrant workers or homeless workers within the mine lease area. Although it is difficult to establish the exact scale and scope of such schemes, one may safely conclude these apply to only a very small minority of quarrying and processing units⁴⁸.

Bonded labour

Bonded labour (including children) is said to be common in the Indian stone quarrying sector (both quarries and processing units). According to the Indian NGO Mine Labour Protection Campaign (MLPC), over 90 percent of the mine workers in the stone quarries are indebted and forced to work off their debts (email correspondence MLPC, 2005). A study on the Guntur district in Andhra Pradesh finds 80 percent bonded labour (Deep and Deep publications, 1995). Bonded labour is not limited to designated castes engaged in quarrying, although the vast majority of the workers 'employed' by quarries are Dalits or belong to designated castes and tribes⁴⁹ (MLPC, 2003).

Bonded labour often concerns entire families. People may be bonded because they are required to purchase their own tools and working materials, housing (in case of migrant workers) and medical expenses. In addition, families need to find the money to survive in the rainy season when the mines

⁴⁵ Concise international chemical assessment report document no. 24, 2000.

⁴⁶ National legislation covering labour conditions:
 - Mines Act 1952 on safe working conditions;
 - Employees State Insurance Act, 1940;
 - Workmen's Compensation Act, 1923;
 - Personal Injuries (Compensation and Insurance) Act, 1963.

⁴⁷ CEC et al., 2000-2002; Raj, date unknown.

⁴⁸ Mines, minerals and People, emailed information, 2005.

⁴⁹ Dalits is the name now commonly used for 'outcasts' or 'untouchables'. The 'scheduled castes' are those specifically listed in the Indian constitution as historically being discriminated against. The 'other backward classes' are not listed in the schedule of the constitution, but are considered deserving of affirmative action.

close down and there is no (other) work available. They often find themselves forced to borrow money, either from the quarry owner or from moneylenders. No records of debts are kept, but the combination of low wages and high interest rates militate against workers paying off their bonds. In stone quarries in Faridabad near Delhi, "three generations may be seen working side by side in conditions of debt bondage", (ILAB, 2003). Another study indicates that a truckload of stone normally brings in 45 to 58 rupees; but families often take home only 15 to 20 rupees after making payments to the contractors. Often, people (families) remain indebted throughout their entire lives because of the difficulties in repaying their loans.

Savings accounts to help workers to save money for large expenses might help prevent indebtedness and therefore bonded labour. This solution is further discussed in the section on bonded labour in processing factories.

Caste discrimination

Caste discrimination, or discrimination on the basis of work and descent, is a major problem throughout Indian society and economy. One out of three Indians live in subhuman conditions as a result of poverty, social exclusion, discrimination and violence. The majority of this group are 'Dalits', previously known as 'outcasts' or 'untouchables'. The word Dalit derives from the Sanskrit word for downtrodden. In fact, Dalits are not even part of the caste system. By using the name Dalit, a growing number of people is asserting its right for decent treatment. The number of Dalits throughout India adds up to 200 million people, or one fifth of the total population of India. The concept of 'untouchability' is forbidden by Indian constitution. The constitution does, however, refer to 'scheduled caste groups'. The Indian government is bound by law to a system of affirmative action and to bring down barriers that prevent Dalits to rise socially and economically. However, over the past fifty years, the government has not been successful. For one thing, the government policies encounter considerable obstruction from high caste groups.

Besides, the scheduled castes include only those Dalits who are of the Hindu, Buddhist or Sikh faith. Christian and Muslim Dalits, about 35 million people, do not enjoy the legal protection of the scheduled castes.

In practice, particularly in the Indian countryside, Dalits live outside the law. Dalits are still considered to be unclean and are looked down upon. Higher caste groups fear 'contamination' and deny Dalits to the use of communal services such as water pumps or entrance to village schools.

Among the quarry workers and the workers of stone processing plants, a majority is Dalit.

Tribal (land) rights

India has a large tribal population of about 80 million people, a most exploited and disadvantaged community. It is widely acknowledged that tribal groups have suffered great injustice as they have been increasingly confined to shrinking enclaves. The Indian Forest Act sees "reserved" forests and national parks as official property for purposes of extraction and earning revenue or for species conservation, in which tribal groups seem to be regarded as illegitimate intruders and encroachers.

The Fifth and Sixth Schedules of the Indian constitution do provide protection of tribal land rights, but, say the critics, only allowing traditional livelihood rights in a very limited way. The landmark judgment passed by the Supreme Court of India in September 1997 in the *Samatha case* established that government lands, tribal lands, and forestlands in the scheduled Areas cannot be leased out to non-tribal groups or to private companies for mining or industrial operations. Consequently, all mining leases granted by the State governments in V Schedule Areas therefore became illegal, null and void and the State Government was asked to stop all industries from mining operations. Mining activity should be taken up only by the State Mineral Development Corporation or a tribal co-operative if they are in compliance with the Forest Conservation Act and the Environment Protection Act. Further, at

least 20% of the net profits should be set aside as a permanent fund as part of business activity for establishment and provision of basic facilities in areas of health, education, roads and other public amenities.⁵⁰

Despite these provisions, tribal groups continue to face acute insecurity from concepts of habitat and livelihood that tend to exclude them by default. Town and country, industry and agriculture, are established categories of national habitat and livelihood, while traditional forest dwelling is not considered as such. The Report of the Expert Group on "Prevention of Alienation of Tribal Land and its Restoration" (October 2004) speaks of land and rights alienation, even of minor forest produce, and of corporate intrusions into tribal domains to exploit its forest, mineral and water wealth, constituting unequal bargains with inadequate compensation for the tribal population. Moreover, the tribes have suffered neglect, poor governance despite budgetary allocations, on account of exploitation by contractors, rent seeking officials and widespread graft.

Nevertheless, new legislation is in the making. The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Bill 2006 is scheduled to come up in Parliament shortly. It is hoped that this bill will roll back the historic injustice done to tribal India by arbitrary forest reservation, while at the same time promoting conservation.⁵¹

Gender

There is a substantial number of women working in stone quarries. Several sources even suggest that women and girls outnumber men and boys in mining and quarrying, sometimes by as much as 100 percent (IFAB, 2003). In general, women are placed at the bottom of the quarrying economy in terms of pay, type of work and job security.

In recent years, female employment in stone quarrying has significantly diminished with the introduction of mechanised technology. Mechanisation often runs counter to women's interests, as they can ill afford to lose their jobs. Women are important economic actors and make a considerable contribution to the household livelihood, often more significant than men (Lahiri-Dutt, 2003).

Female workers usually work in surface jobs, since the Indian government, following up on the ILO conventions, has set restrictions on women working underground and at night. In most cases, women work as partners to their male counterparts. Often whole families, including children, work side by side, more or less operating as a single working unit.

The tasks performed by female quarry workers can generally be characterised as low-skilled "heavy and monotonous work" (Lahiri-Dutt, 2003), which involves, for example, unloading blocks and boulders at the crushing site and transporting stone in baskets carried on their heads (Madhavan, 2004). The Makrana fact-finding report documents that female workers are mainly engaged in crushing, separating and segregating smaller blocks and doing the odd job (CEC et al, 2000). In general, women are excluded from jobs involving the use of explosives and the operation of heavy machinery such as crushers.

Female quarry workers are systematically paid less than male workers. However, it is hard to assess whether women also structurally receive lower wages when performing tasks similar to the men, as they are generally set to different tasks than their male counterparts. At the same time, it is common practice in India to pay women in the same line of work less than men.

Impact on social structure / migrant labour

The occurrence of migrant labour in quarrying sites is quite high, and often involves entire families. Migrant workers are often brought in from nearby districts. Migrant workers generally come from disadvantaged rural communities. They are frequently landless peasants, belonging to designated castes or tribes. The influx of migrant labour may understandably have a significant impact on local social structures, but such effects have as yet hardly been mapped out. However, a report on the Bundi district mentions social tensions related to the influx of migrant workers (Madhavan, 2004).

⁵⁰ See <http://www.mmpindia.org/action%20alert.htm>.

⁵¹ "Forest Rights Bill. Tribal rights and wrongs", by B G Verghese, in the Deccan Herald, 8 July 2006.

Illegal mining

Illegal mining involves quarrying without a concession given out by the government. Several sources found quarrying operations taking place without a licence (CEC et al, 2002; Raj, mmP, India; 2005). Part of this illegal quarrying takes place in protected areas (see paragraph 3.5). It is important to note that the difference between what does and does not constitute illegal mining in practice is rather diffuse: Licences for quarrying are often acquired under suspicion of corruption (the issue of corruption is dealt with in section 3.7). It may be argued that quarrying operations with a licence obtained under fraudulent conditions should be considered equally illegal as quarrying operations operating without a licence altogether. The former may in fact well be more socially and environmentally detrimental, as these semi-legal operations tend to be larger in scale and are 'protected' by the authorities.

3.5.2 Environmental issues

Looking at the quarrying of natural stone in developing countries from an environmental perspective, a number of issues come up:

- non-renewability of the resources;
- destruction of habitat and land degradation;
- dust emissions and noise pollution;
- energy consumption;
- water consumption;
- waste discharge;
- reclamation and rehabilitation of abandoned quarries.

Non-renewable resources

One may argue that the extraction of natural stone is intrinsically unsustainable in the sense that it constitutes a non-renewable resource. On the other hand, natural stone products have a very long lifespan, can be almost entirely recycled and do not emit heavy metals or other hazardous materials.

Habitat destruction and degradation (land stewardship)

Quarrying not only pollutes the environment, but it also lays extensive claims on land and water resources, leading to fundamental changes in local environments and biodiversity.

Quarries are often situated in remote areas. The establishment of new quarries generally involves setting up the infrastructure to open up an area, as well as the establishment of mining villages for migrant workers, etc. Open pit quarrying involves land excavation, the removal of topsoil, and the blasting of soil and surface rock (Raj, date unknown). These activities tend to cause fundamental changes to the natural environment and local ecosystems, ranging from deforestation and the diversion of river beds to the destruction of flora and fauna, etc. Quarries tend to be located in areas, which, often because of their geological characteristics, frequently house unique species, which may be adversely affected by quarrying operations.⁵² In addition, deforestation may cause soil erosion and increase flooding during the rainy season. Flooding as a result of sand quarrying has been reported to occur regularly (article Business Line, 2001; Janardhanam, 2002).

Unfortunately, exact figures for the land use of quarrying operations are not available.

However, a study on sandstone mining in the village of Budhpura (Bundi district) shows that over a period of 30 years, the increase in quarrying operations has significantly added to forest degradation and wasteland development (Madhavan, 2004). In terms of land stewardship, reforestation does take place to some extent, but data on reforestation mainly relate to mineral and metal mining (Central Bureau of Mines, 2004).

⁵² The Environmental Investigation Agency (EIA) has published a report on highlighting the destruction of tiger habitat in India due to (illegal) mining in protected areas. Wildlife experts in India report that at least 200 of India's protected areas have been impacted in one way or another by the effects of illegal mining (EIA, 2002).

There are indications that the quarrying industry is beginning to acknowledge that its operations may adversely impact natural habitats and the environment. Environmental impacts and preventative and mitigating measures are beginning to feature in training sessions. This implies that companies are aware of government rules and regulations and the need to follow up on them. However, this only holds for a minority of (mostly) larger registered quarries. A number of large quarries have reportedly been making an effort regarding topsoil management to avoid erosion and dust creation (Raj, date unknown). On average, however, environmental protection seldom extends beyond rudimentary measures. Inappropriate technology, lack of consciousness in terms of the importance of mineral conservation, and inadequate financial support often lead to disorganised and wasteful exploitation of mineral deposits, including natural stone (TERI report, 2001).

Emissions

Dust pollution from quarrying operations tends to affect local air quality (particulate matter). Quarry dust not only pollutes the air, but may also lead to serious health problems.⁵³ Quarrying generates dust both on site and on roads. Dust emissions tend to affect animals, vegetation and agriculture, although the precise effects still need to be more extensively researched. (Netherlands Committee for IUCN, 1996). However, incidences of animals inhaling dust containing dangerous (silica) substances have been recorded, as well as oxygen deprivation of plants and trees, which may lead to a plant disease called asphyxia (World Rainforest Movement, 2004). An Indian study observed that dust falling on agricultural crops or tree leaves affected their growth and reduced the plants' capacity for photosynthesis (Raj, date unknown).

Dust problems are especially pertinent in dry areas such as Rajasthan. A study on the Karnataka region showed suspended dust particles up to distances of 200 metres (NISM, 2004). Dust emissions may be controlled by water sprays and wet processing. However, in quarrying – as opposed to processing – this is rare. Measures taken by quarries (and processing units) are generally focused on preventing dust inhalation of dust in relation to health problems rather than on mitigating the environmental effects.

As mentioned before, noise pollution is another common feature of quarrying operations. In addition to adverse health effects in humans, noise pollution can also disrupt fauna. However, no studies adequately assessing the impact on local fauna could be found.

Energy consumption

The quarrying, processing and transport of natural stone is highly reliant on the use of fossil fuels (World Rainforest Movement, 2004). Quarrying is generally classed as an energy-intensive industry, mainly due to the transport of heavy materials involved. Studies carried out in the context of the Dutch Programme on 'Sustainable Construction' show that in the natural stone production chain, transport is the most energy consuming factor⁵⁴.

In comparison to the transport and, to a lesser extent, processing phases, the energy consumption in the extraction phase is low and all the more so in developing countries due to the high incidence of manual work. However, given the trend of increased mechanisation in quarrying operations in developing countries, energy consumption levels in the extraction (and processing) phase is likely to increase. In terms of the total life cycle, processing techniques and the intermediate stage at which the product is transported in particular are decisive in terms of the actual energy consumption, which makes it difficult to generalise.

Water consumption

Contrary to processing, the extraction of natural stone is generally not very water intensive. However, extraction (digging) may to a certain extent influence groundwater levels. This goes for marble quarries in particular, as these can reach depths well below groundwater levels.⁵⁵ In addition, water

⁵³ The generation of dust during the extraction phases tends to differ per type of stone. For example, slates and (calcareous) sandstone have a higher dust impact than granite.

⁵⁴ Although a comparison between boat and road-transport covering an identical route was not made; DUBO Information Centre, email correspondence, 2005; Centrum Natuursteen, 2005.

⁵⁵ In the Makrana marble mining region, water is allegedly pumped into reservoirs as a conservation measure, but this was not corroborated by the fact-finding team that studied the Makrana marble mines (CEC et al., 2000).

sprays may be used for dust control during transport and general quarrying operations. The increase in water consumption may lead to alterations in the local water economy. A study on the environmental impact of marble mines in the Nagaur district in Rajasthan ranked the impact of quarrying on water resources as significant, although it did not indicate the ways in which quarrying affects the water levels.⁵⁶

Disturbance of the local water economy may have a range of environmental and social consequences, including:

- impacts on biodiversity;
- threats to agricultural and farming activities;
- social conflicts over water sources (EIA, 2002).

Some processing factories have been reported to recycle the water used, but this is not sufficient to avoid water scarcity (Majumber, 2004).⁵⁷

Solid waste (discharge)

Although this is even more so in the processing of natural stone (sawing and cutting of blocks into slabs or tiles), the production of solid waste at the quarrying site can also be extensive.⁵⁸ One Indian source mentions that only about 60 percent of quarried materials is useful or constitutes a saleable product (Lahiri-Dutt, 2003), although it is unclear if this figure covers the extraction phase only, or both the extraction and processing phases combined. The [REDACTED] ([REDACTED]), corroborates a loss of an estimated 30 percent in the sawing of raw blocks. Raw block sawing is on occasion carried out on site at the quarry.

A 1999 study on solid waste generation and utilisation in the calcareous stone industry quotes an estimated production of 125 million tonnes of natural stone generating and estimated 17.8 million tonnes of solid calcareous waste per annum. This waste constitutes a serious environmental hazard, adversely affecting the fertility of the soil, contaminating water sources and contributing to drainage problems (TIFAC, 1999).

However, technological advances in developing countries will likely help control the output of waste material as percentage of usable material.

Various sources refer to unmonitored dumping of solid waste (comprising of overburden soil, silt, aeolian sand, calcareous sand, mine muck and different waste rocks). Disposal of waste is not restricted to the excavated area alone (Natani, 2003). The dumping of unusable thick-bedded sandstone which covers the splittable sandstone that is commercially viable, is reportedly creating artificial hills along the roads in the sandstone mining area in the Bundi district, Rajasthan (Raj, date unknown).

Reclamation and rehabilitation of land after closure

Reclamation and rehabilitation of land after closure are hardly practised, even though the relevant mining laws in India stipulate that "every holder of prospecting licence or mining lease shall undertake the phased restoration, reclamation and rehabilitation of lands affected by prospecting or mining operations and shall complete this work before the conclusion of such operations and the abandonment or prospect of the mine". The need to rehabilitate abandoned mines is also recognised in the "Vision 2020" programme of the Rajasthan Department of Mines and Geology (EIA, 2002). Once a quarry is exhausted, what remains is a 'moon' landscape still having an adverse impact on the surrounding environment (for example, continuing drainage of water and 'landscape' pollution). Even if there is no reclamation and rehabilitation after closure, ecological islands *may* be accidentally created in the course of 10 to 40 years, because the former quarrying sites tend to be deserted with

⁵⁶ An article on BBC-online reports marble quarrying 'sucking Indian village dry' (2004). However, this concerns the processing (cutting) of marble in factories rather than quarrying as such.

⁵⁷ See also paragraph 4.6 covering processing issues.

⁵⁸ Interestingly, both quarrying techniques and the stone type influence the actual waste generated. For example, depending on the intended final product, slate and quartzite extracted in slabs are more polluting than granite extracted in rectangular blocks, in terms of solid waste production. On the other hand, production of granite requires sawing, which generates dust - as opposed to slate slabs, which can be sold directly without sawing on the quarrying site being required.

no other activities taking place (email [REDACTED], 2005). However, this should take place in controlled conditions as part of a rehabilitation plan, rather than be left to chance.

3.6 CSR issues in processing

This section describes in more detail the most important issues related to the processing of natural stone. To a certain extent these issues correspond with the issues relative to the quarrying of natural stone.

Labour relations

Labour in natural stone processing in India is largely unorganised. Hence, in many stone processing factories, workers' unions are non-existent and workers are not organised. This weakens the position of workers.

Migrant labour

In some areas featuring stone processing plants, the local population tends to opt for employment in agriculture, provided that sufficient agricultural land and groundwater for irrigation are available. This is considered more attractive than working in stone processing. In areas in Rajasthan where the price of agricultural land has increased over the past years, people who quit farming and sell their land, prefer to invest the revenues in a business of their own instead of working in a stone processing factory.

As a result, various stone processing plants - sometimes exclusively - employ migrant workers from nearby districts. These workers are mainly from disadvantaged rural communities. They tend to belong to the Dalit class, or other designated castes or tribes and are mostly landless and relatively poor. The plants prefer to employ people from outlying districts as they can easily be made to work longer hours. Those who have had to migrate in search of labour generally do not bargain or argue about their employment conditions, and rarely ask for leave. Furthermore, the processing of natural stone is typically done by men only, because women are considered too slow and unfit to perform the work (Sengupta, 2005). Rooms for the migrant workers are provided for free. Specific information on the impact of migration on the households these workers have left behind could not be found.

Child labour

Various stone processing plants predominantly employ male migrant workers from nearby districts. Some of these migrant workers bring their families with them. In one plant in Rajasthan, this applied to 15-20% of the workers. There is evidence that families of male migrant workers, including their children, are frequently also employed in the stone processing industry (Sengupta, 2005). However, it remains unclear which tasks they are set to perform. As women and children are generally considered unfit for employment in the actual stone processing as such, it is likely that they perform related tasks such as cleaning.

Working hours and holidays

Nowhere in India do workers in the unorganised sector receive extra wages for the overtime they put in. This also applies to workers in natural stone processing. Overtime is forced, to the extent that workers generally dare not refuse to put in overtime for fear of losing their employment (Sengupta, 2005). Data on (paid) holidays could not be found.

Wages

The basic minimum wage in India is Rs 60 per day, but states can set their own minimum wage levels. Since 1 December 2004, the official minimum wage in Rajasthan is Rs 73 per day or about Rs 2000 per month, depending on the number of working days. Some natural stone processing plants pay wages above the minimum. At the [REDACTED], for example, basic wages of permanent

workers start at Rs 2500 per month and supervisory staff earns Rs 6000 per month or more. However, workers in packaging are remunerated on a piece rate basis. It is not clear whether these wages are in fact living wages, e.g. sufficient to cover the basic needs of a modest household, without the need for children to go out to work in order to supplement the household income.

Bonded labour and savings

Although the incidence of bonded labour is more frequent in stone quarrying, it occurs in processing as well. Workers are not required to deposit money or identity papers with the owner or manager of the factory. However, workers tend to accept advances from their employer or contractor, which may result in high levels of indebtedness, forcing workers into bonded labour. Advances are often accepted as a means to ensure regular employment and full payment of wages. Monies advanced are subsequently docked from workers' wages.

At times of high financial need, such as marriages, funerals or illnesses requiring medical treatment, workers may take out higher loans from their employer or contractor. Generally, there is no one else they can turn to who might be prepared to provide financial support. Workers rarely manage to fully repay these higher debts and employers tend to take advantage of the situation by paying out lower wages. Some employers actually wait for opportunities to extend their loans to workers in order to obtain cheap labour. As employers calculate that most workers will become less productive after the age of 30, they typically discontinue the extension of loans to their employees once they reach this age. These workers are subsequently forced to remain in the employment of these employers for at least another five years or more, at reduced wages.

Occasionally, employees are forced to repay all of their debts upon changing jobs. Generally, however, the new employer repays the debt and the loan is transferred (Sengupta, 2005). Although bonded labour is common practice throughout India, prosecution of this punishable offence is rare (Swamy, 2000).

A savings account to enable workers to save up money for large expenses may help prevent indebtedness and thereby bonded labour. Indian national legislation provides for a mandatory Provident Fund (PF) facility for employees of establishments with a permanent work force of more than 10 people. Employees may take out loans against the balance of his/her PF account (Sengupta, 2005). Hence, a PF facility may be instrumental in the prevention of bonded labour. PF accounts are also generally considered proof of employment.

Occupational health and safety

Health and safety issues in natural stone processing facilities include dust and noise in the cutting process and the manual carrying of heavy weights.

A recent report on public health in Gujarat revealed that the number of people suffering from tuberculosis (TB) and silicosis is rising rapidly. As explained in the section on quarrying, silicosis is an occupational lung disease caused by the inhalation of silica particles, mostly from quartz in rocks and sand. Tuberculosis is a transmittable disease that is easily communicated among workers in industries with high dust emissions. The incidence of these two fatal diseases among workers in stone cutting factories is relatively high. To a certain extent, these diseases may be prevented by wetting the rocks before processing and by using modern machinery to minimize dust generation (Hindustan Times, 2005). But wet cutting hardly appears to be the norm, in particular in manual processing. In mechanised plants, wet cutting is applied in the cutting and polishing process for two reasons. Water is not only used to prevent high dust emissions (Sengupta, 2005), but also to cool the saw blades that might otherwise be damaged because of the extreme heat generated during the cutting process.

The machines used for stone cutting and polishing in mechanised plants can generate noise levels of 75 to 85 dB in the working area. Continued exposure to this level of noise is very harmful. The [REDACTED] [REDACTED] was found to provide earmuffs for its workers, but many workers fail to wear these. Likely, their supervisors do not oblige them to do so, and the workers are insufficiently aware of

the hazards, lack the necessary training and are simply not used to wearing protective equipment (Sengupta, 2005).

Most processing plants use cranes to unload raw materials from their trucks and reload them with their finished products. Tiles or slabs are usually packed in large boxes that are so heavy that they cannot be carried manually. However, it is common practice for heavy blocks or slabs to be manually carried from the loading platforms to the processing site (Sengupta, 2005).

Other occupational health and safety issues include the availability of drinking water, first aid kits and medical facilities. Some processing plants have their own medical facility. Access to public medical facilities is subject to the Employees State Insurance (ESI) Act, which is explained below.

Benefits, insurance and compensation

A number of processing plants have an ESI employee insurance scheme in place, granting access to ESI facilities. However, this is not general practice. A key problem is that many companies refuse to keep a register of employees to avoid responsibilities towards workers (Sengupta, 2005). In quarrying, when accidents occur in the work place, compensation is generally not paid out. Data on accident compensation payments in stone processing could not be found.

Environmental impacts

In mechanised plants, large quantities of water are used to cool the saw blades in aid of the cutting process. Some tile producing plants feature on site recycling plants (particle settlement chambers), which help lower the amount of water required (www.mineralszone.com).

The stone processing industry's wastewater is highly polluted and cannot be re-used. This so-called slurry is the industry's main waste product. Generally, it is discharged outside the processing plant, either by the side of the road or in the central drainage system of the industrial area where the plant is located (Sengupta 2005). When dumped on open land, stone slurry adversely affects agricultural productivity of the soil by decreasing porosity. Ultimately, it may also affect the groundwater recharge. Consequently, slurry dump sites tend to no longer support vegetation. When slurry dries up, the dust and small particles generated during processing are released, causing serious air pollution and adversely affecting human health and agricultural crops.

On site water recycling facilities tend to lower the amount of wastewater discharged, while increasing the concentration of particles in the water. At non-mechanised plants, if the stones are not wet before cutting, processing will generate dust rather than slurry.

In addition, the processing of natural stone also generates considerable amounts of solid waste - although solid waste generation at the quarrying stage tends to be much higher. The figures on waste generation below were derived from a 1999 study, which covered the entire calcareous stone industry including marble and limestone as well as cement:

- 12.2 million tonnes (69%) of stone rejected at the quarries;
- 5.2 million tonnes (29%) in the form of solid cuttings/trimmings and undersize materials, mainly at the processing units;
- 0.4 million tonnes (2%) of slurry at processing and polishing units.

However, since 1999, mechanisation has picked up at a quick pace and hence the share of slurry will have increased, while the share of solid waste from cutting and trimming will have decreased (TILAC, 1999).

The same study also indicates that for marble quarried by blasting the amount of solid waste may be as high as 65-85% of all the stone quarried. It estimates that this may be reduced to 20-30% if more modern wire saw techniques are applied. The percentage of waste marble could be further reduced by increasing the utilisation of small or oddly shaped blocks (TILAC, 1999). Hence, enhancing plants' capacity to process these will directly affect the amount of solid waste generation.

Any solid waste generated during processing is generally dumped in public areas – by the road side or the foothills of the mountains in forested areas. Although municipalities generally identify designated areas for solid waste disposal, most companies prefer to avoid the transportation costs involved and dump their waste elsewhere (Sengupta, 2005).

3.7 Operational CSR aspects in quarrying and processing of natural stone

The two previous sections provide an overview of corporate social responsibility issues in natural stone quarrying and processing. In order to arrive at addressing the problems that have been identified, certain operational aspects need to be taken into account. These operational aspects of a CSR performance are briefly described below.

Corruption and bribery

Many CSR norms, including those on labour conditions and environmental impacts, are covered by Indian national legislation. In practice, however, law enforcement is weak and many of the norms are violated. Existing legal obligations are often not met, as punishment for violations tends to be lenient. For example, the fines for failure to keep employment registers and for violating environmental norms are relatively low, so that it remains more attractive for companies to violate the norms and pay the fines rather than comply with the law (Sengupta, 2005).

Another important root cause of the widespread violation of legal norms is the high incidence of corruption and bribery in India. For example, one source indicates that the state pollution control board of Rajasthan provides pollution clearance certificates for a nominal bribe of Rs 5000, which are valid for a year. Obtaining the necessary certificates through official channels is several times more expensive. Bribery allows quarrying and processing companies to easily evade their legal obligations and responsibilities.⁵⁹

Record keeping

A key problem in India's natural stone industry, and a root cause of the consistent violation of labour laws, is the lack of record keeping by quarries and processing companies (Sengupta, 2005). Companies are legally required by various laws - including the Equal Remuneration Act, the Factories Act, and the Employees State Insurance Act - to maintain written employment records. For each employee, registers should include, among other things:

- the employee's name;
- the nature of the work performed by the employee;
- the wages paid;
- the hours worked in overtime.

Adherence to these legal requirements would facilitate the implementation of labour norms and the verification of the employment standards applied by a company.

In addition, the quarrying sites and companies themselves should also be registered. Illegal quarrying frequently occurs and it often remains unclear who in fact owns certain quarries or processing plants (Sengupta, 2005).

⁵⁹ The huge impact of corruption on the regulation of Indian industry is further illustrated by the outcry caused by the introduction of public legislation in Andhra Pradesh. In 2000, the state authorities adopted the Andhra Pradesh Mineral Rules 2000, which made it mandatory for all granite processing units, quarry leaseholders and dealers to register with the Department of Mines and Geology. However, many small-scale processing units opposed this requirement and refused to register. Their argument ran that the accompanying inspections by the mining, vigilance and sales tax departments would only help to increase the levels of corruption (Business Standard Daily, 2001). Hence, to enhance corporate CSR standards in the natural stone industry and in India in general, it is of vital importance that the issue of bribery and corruption be addressed.

Awareness and protection against retaliation

Among the reasons given for the low standards applied by Indian companies in general, in particular in relation to issues such as child labour, are:

- employers feel no guilt or concern with regard to their practices;
- employers state that they are helping families by saving them from starvation;
- employers and parents are not truthful about children's real age;
- children are told to run away when inspectors visit a factory;
- child labourers in quarrying are often unwilling to speak out about their employers and working conditions for fear of harassment⁶⁰.

The above suggest that it is important to begin raising awareness among company managers, as a complement to other measures to improve CSR. In addition, adequate protection from retaliation by the company they work for needs to be extended to workers providing public inspectors with information.

Responsibilities of different actors in the product chain

Although promoting more responsible corporate conduct in India's natural stone industry is primarily the responsibility of the companies concerned, business links higher up in the product chain must also take their responsibility. Frequently, finished products are tailor-made to customer order – as is the case with, for example, tiles in special colours. This also applies to a significant number of export products. In some instances, individual natural stone products can be traced in full, with final customers fully capable of knowing exactly from which mine their products originate. The shortening of product chains, described in the previous chapter, increases the responsibility of retailers and final customers because it provides them with greater influence over the standards upheld by the processing plants and quarries they do business with. They may insist, for example, that their suppliers issue their workers with protective equipment. At the same time, retailers and final customers are not equipped to verify supplier behaviour. This has proven a problem even for the Indian public authorities. Despite the frequently very short product chains, transparency regarding CSR issues is typically low.

⁶⁰ Sakar, 1997, p37-52, p121-124; Rabinowitz et al., 2004, p5; Sengupta, 2005.

Chapter 4

Existing policies and practices on sustainability: gaps and challenges

In this chapter, existing policies and practices concerning sustainability issues relevant for the natural stone industry are looked into. Corporate and public policy mechanisms are considered, as well as relevant civil society initiatives. These mechanisms and initiatives will be measured against broadly agreed upon CSR-principles.

Also in this chapter suggestions for responsible extraction and processing of natural stone products in developing countries are provided. These recommendations include suggestions for operational systems to support the implementation of such standards. To this end, the concept of a multi-stakeholder initiative for the natural stone sector is explored here.

4.1 Dutch public policy on sustainable construction

The 'Sustainable Construction' programme of the Dutch government offers instruments and information on product and materials for public construction to both provincial and local authorities and private actors. Government agencies, including advisory bodies, on the national level relevant to construction, such as the government buildings agency 'Rijksgedebouwendienst' (RGD), have developed their own set of guidelines for sustainable construction (environmental index), but also use the national guidelines for sustainable construction in utility building in advising other governmental bodies.⁶¹

The guidelines only refer to natural stone as a sustainable option in only three instances⁶². Natural stone is mentioned in the environmental specification for paving material under general use and re-use: "when possible, use old, already used paving material such as used bricks and natural stone (re-use)". In the national guidelines for sustainable construction natural stone is mentioned twice. Only, it is not clear if natural stone as a material has been subjected to a Life Cycle Analysis (LCA) in all cases where natural stone is suitable for a specific application. No information is given on the parameters and assumptions used in the calculations.

As there is no international certifying organisation guarding the social circumstances in quarries, the national guidelines for sustainable construction do not list social specifications with respect to natural stone.

In addition, adherence to the national guidelines for sustainable construction is not compulsory. They are merely instruments to support local governments looking to improve sustainable construction. As

⁶¹ The sustainable construction programme and the national guidelines for sustainable construction offer information on the sustainability performance of materials/products for specific applications. However, the specifications that are given mainly refer to environmental aspects. In addition, the environmental specifications may not always reflect the entire spectrum of environmental aspects relevant to a production chain, as not all stages in the production chain are always included. Social issues that rank high in the primary phases of the chain (extraction, production) are only occasionally addressed, for example in the case of wood by advising the use of certified wood like FSC.

⁶² It is not evident if natural stone has been included as potential material in the calculations (LCA) regarding all applications natural stone could be potentially used for.

such, local governments are under no obligation to carry out construction projects in a sustainable manner.⁶³ They are, however, free to formulate requirements for materials, including natural stone. All ambitions and instructions regarding particular materials or products can only be realised through voluntary agreements, as there are no legal instruments to enforce requirements.

The [REDACTED] has a focus on sustainability. In this context, the [REDACTED] deploys *Nationale Pakketten Duurzaam Bouwen*, or national guidelines on sustainable construction, which offer sustainability guidelines and concrete concepts to help policy-makers, designers and other parties in utility building to develop their own vision and approach. The [REDACTED] also uses an environmental index (based on a tool called 'GreenCalc') which was developed by [REDACTED]. [REDACTED] owns the 'environmental index based on 'GreenCalc', which is run by the [REDACTED] together with non-governmental organisations parties, including NIBE, NUON and TU Delft.

The environmental index quantifies sustainability, and assesses the environmental impact of a building in a single figure. The model's database is fed data from Life Cycle Analysis (LCA) studies and from international literature. The environmental aspects of production chains as a whole are taken into account. Currently, [REDACTED] and other parties are exploring the options for the development of a Real Estate Index. This involves building an interface that connects existing indexes on social (People) and economic (Profit) aspects with the environmental index (Planet). However, in terms of social aspects (People), the index will focus primarily on work and employment-related issues. Social aspects of production phases further down the chain are not included.

4.2 Dutch national policy on green procurement

The Dutch sustainable procurement scheme (*Programma Duurzaam Inkopen*) stimulates governments to integrate environmental and social aspects in the procurement of products and services. The program is carried out by *SenterNovem*, an agency of the Dutch Ministry of Economic Affairs. Currently only a limited amount of products and services that comply with sustainability criteria are procured by governments; a recent survey showed that about 20 percent of products and services comply with certain sustainability criteria.

The sustainable government procurement programme primarily focuses on environmental aspects. Social aspects are only incidentally and briefly mentioned. The social criteria that are included tend to vary per product group and focus primarily on health and safety issues in the *application* phase of the products concerned. Social criteria focusing on the *production* phase of products are very limited.

Guidelines are provided at the product level, divided into different product groups. These include:

- buses;
- coachwork/damage repair;
- catering: soft drink vending machines, company and personnel catering;
- conservation systems: conservation of steel;
- energy: electricity;
- green service;
- office furnishing: office furniture, indoor lighting, office design, paintwork;
- office equipment: office devices, cartridges, computers;
- clothing: office garments;
- other: equipment and tools, street lighting, lubricating jellies, waste;
- paper: print work, copy work;
- cleaning: in-depth cleaning, cleaning;

⁶³ Local authorities that have undertaken certain initiatives in the field of sustainable construction include Zoetermeer, Tilburg, Amsterdam, Den Haag, Utrecht (Leidsche Rijn), Apeldoorn, Amersfoort, Rotterdam Hoogvliet and Wageningen. However, detailed information on the content and scope of these initiatives is not readily available.

- means of transport;
- refuse lorries;
- roads: paving materials, maintenance of road surfaces.

Expected extensions: company cars, gas, services and wood.

Natural stone products easily fit into two of the existing categories, i.e. 'office furnishing', subcategory 'floor covering'; or 'roads', subcategory 'paving materials'. However, for the time being, 'floor covering' does not refer to natural stone.

The specifications for environmentally friendly paving materials do refer to natural stone in two instances. Firstly, there is a reference to the national guideline for sustainable construction, which mentions natural stone as a potential recycled material to be used for paving. Secondly, reference is made to the functional demands for paving materials: NEN-EN 1341, 1342 en 1343 (demands and analysis methods for slabs, cobblestones and curbs) specifically deal with natural stone. The specifications for paving materials constitute advisory guidelines only. Most elements of these specifications could easily be inserted into subcontracting specifications, including the list of requirements subcontractors must adhere to.

4.3 Regulations

The *Bouwstoffenbesluit*, or the Building Materials Decision, stipulates that companies must prove that natural stones containing more than 10 percent silicium and calcium do not drain into the soil and (ground)water. For small companies working with and trading (different types of) natural stone in small quantities, the research costs involved are far too high. Legal enforcement of this decision therefore may have serious consequences for the natural stone industry in the Netherlands, as the majority of natural stone companies can be typified as small-scale. The trade organisation of natural stone processing companies is lobbying the issue on behalf of its members.

The *Arbobesluit Zandsteen*, or the Occupational Health and Safety Decision on Sandstone (1951, revised in 2002), prohibits the storing and/or processing of sandstone containing more than 75% quartz. Under certain conditions, an exception is made for the restoration of monumental buildings. According to different stakeholders, however, imports and direct sales of sandstone products is allowed. This means that Dutch law does allow processing of sandstone containing more than 75% quartz to take place in another country. Processing and stocking of sandstone containing less than 75% quartz (calcareous sandstone) is allowed.

4.4 Corporate sustainability initiatives in the natural stone sector

Most ecological and socio-economic issues in the Dutch natural stone sector involving Dutch companies are addressed by means of legislation and, to a lesser extent, corporate management. Legislation covers:

- health and safety issues, protection of employees from dust and noise;
- limitations regarding the weight that employees are allowed to handle;
- wastewater being filtered before being discharged.

An example of corporate management is a so-called 'externally verifiable code', which focuses on health and safety and environmental issues within companies themselves. It is designed especially for

companies involved in 'high-risk' activities. To date, implementation by natural stone processing companies has been very limited.

There are also a number of EU-wide corporate management initiatives expressly focusing on the ecological and socio-economic aspects of quarrying.

However, there are virtually no sustainability initiatives within the Dutch natural stone sector that focus on sustainability issues relating to the product chain of natural stone as a whole and which can be characterised as full-fledged corporate social responsibility initiatives⁶⁴.

All interviews with stakeholders in the sector held in the context of this research imply that CSR relative to the natural stone product chain in no way features as an issue in the day-to-day practice of natural stone traders and the natural stone processing industry. On an 'informal' basis (e.g. none of the issues are explicitly outlined or documented in company policies or purchasing guidelines), companies indicate that they maintain acquisition codes based on self-defined sets of values. Importers and processing companies usually visit their overseas suppliers (mostly processing factories) on a regular basis to ensure, amongst other things, that the companies concerned have the capacity to deliver the products requested. This primarily entails a quality check, but it may include a superficial inspection of the cleanliness of the firm and the occurrence of child labour, but social and ecological issues are neither investigated in detail nor integrated into procurement policies. In general, companies claim that it is outside their power and ability to control or keep abreast of all the ins and outs regarding the environmental and socio-economic performance of their suppliers.

Most companies involved in the natural stone sector do know the country their natural stone originates from. However, in general, companies are not familiar with the exact location (quarry) their natural stone is extracted from, nor of any specific related sustainability issues. However, there is a certain level of awareness, as companies do realise that in general the extraction and processing of natural stone in developing countries does not take place according to prevailing Dutch and European standards.

The general impression of the Dutch natural stone sector is that the sector is quite 'closed', with companies 'keeping to themselves'. Furthermore, in an increasingly competitive market keeping afloat is a first and foremost priority for most companies.

This does not necessarily mean that certain companies may not develop a more pro-active attitude when market opportunities (incentives) become more clear and transparent to them. Some companies do recognize the need to look into CSR issues more closely, e.g. in terms of possible risks of their reputation or product quality being tarnished.

Trade organisations confirm the general impression regarding CSR involvement, awareness and attitude. Currently, a programme is being initiated by the trade organisation⁶⁵, but this focuses on the quality of internal company processes rather than on CSR issues related to the natural stone chain.

Here some examples are given of corporate initiatives that could provide guidance to the sector.

4.4.1 [REDACTED]

The Dutch trade organisation [REDACTED] has formulated a code of conduct which refers to corporate social responsibility. The [REDACTED] asks (aspiring) members to agree to operate in a socially responsible manner. However, this concept is in no way elaborated or implemented. To celebrate its centennial, the [REDACTED] organised a symposium in May 2006 on 'the internationalisation of the natural stone sector and corporate social responsibility'. In the June 2006 volume of *Natuursteen Magazine*, the professional magazine for the natural stone sector, [REDACTED] ideas on CSR are briefly outlined. [REDACTED] feels that companies need to stand out nowadays, to be able to survive. Quality is the first discerning criteria,

⁶⁴ [REDACTED] (before the [REDACTED] takeover) was involved in a project involving CSR elements related to natural stone from India, together with the Dutch town of Kampen and their supplier in India. However, this project ended prematurely due to unexpected financial and administrative problems.

⁶⁵ Comparable to ISO.

but also through corporate social responsibility companies can mark their positions. CSR is more than a slogan, this is something the [REDACTED] should go for, according to the article. 'A customer buying a floor or a monument will want to know if the material was extracted in a responsible manner, if child labour was involved. These are legitimate questions. When companies live up to CSR, then customers can expect answers to such questions', according to [REDACTED], director of [REDACTED]. Also, [REDACTED] is currently developing a benchmarking scheme, to be presented to the [REDACTED] members by October 2006. This 'certificate', however, does not deal with international supply chain issues and does not provide benchmarks for integration of CSR into the management system.

4.4.2 [REDACTED] Corporate Social Responsibility

[REDACTED] is a British building materials company specialising in landscape products⁶⁶. [REDACTED] imports between 2,500 and 3,500 containers of natural stone per year from India and China. [REDACTED] purchases from a limited number of longstanding natural stone suppliers.

About seven years ago, [REDACTED] started the process of managing standards in its supply chain. To this end, [REDACTED] has adopted an environmental policy. A board director has been assigned the specific responsibility for the environmental performance of the company. Also, [REDACTED] subscribes to the Ethical Trading Initiative base code and has invested time and energy in promoting this code among its suppliers. Audits are performed by auditing firms such as [REDACTED]. Remarkably, trade unions or civil society organisations are not consulted during these audits, according to [REDACTED]⁶⁷

[REDACTED] purchases from three main suppliers of natural stone, two in China, one in India. Since [REDACTED] is a major buyer for the natural stone companies in both China and India, there is a strong economic interest to meet [REDACTED] requirements. [REDACTED] pays for the audits, the suppliers bear the costs for compliance. Working hours is a bottleneck issue in both China and in India. Compliance to health and safety standards is a concern in India. According to [REDACTED], child labour and bonded labour do not occur at the level of these suppliers.⁶⁸

[REDACTED] has outlined its ideas on corporate social responsibility in a 'Sustainability Statement'.⁶⁹ In this statement, [REDACTED] formulates its principles on health and safety, social and ethical responsibility, employees and the community. Specifically under environmental management, the statement refers to environmental impact, energy, transport, packaging, waste reduction (e.g. use of recycled natural granites in 'conservation paving'), land management (e.g. rehabilitation of former quarries in the UK) and the environmental impacts of its products.

It should be borne in mind that the sustainability efforts of [REDACTED] are not specifically geared towards natural stone purchased in developing countries, but designed to fit the general assortment of [REDACTED] building materials, of which the majority is produced in the UK. Moreover, [REDACTED] policies are not specifically designed for an international supply chain. In most cases the stakeholders [REDACTED] refers to in its CSR statement, such as employees and the community, are UK based. [REDACTED] unambiguously limits its efforts to its own direct suppliers. It is up to these suppliers to demand compliance to the standards imposed from their respective subcontractors, this will not be part of [REDACTED] monitoring.⁷⁰

⁶⁶ See [REDACTED] website, [REDACTED]. 'Established in the late 1880s, [REDACTED] is the UK's leading manufacturer of superior natural stone and innovative concrete hard landscaping products, supplying the construction, home improvement and landscape markets. We provide the product ranges, design services, technical expertise, ideas and inspiration to transform gardens, drives and public and commercial landscapes. The Group operates its own quarries and manufacturing sites, as well as 12 service centres and 14 offices throughout the UK. As a major plc, [REDACTED] is committed to quality in everything it does, including environmental best practice and continual improvement in health and safety performance for the benefit of its 3,000 strong workforce.'

⁶⁷ Telephone conversation between [REDACTED] of [REDACTED] and [REDACTED], [REDACTED] managing director, 26 July 2006.

⁶⁸ Idem.

⁶⁹ [http://\[REDACTED\]/select/pdf_xls/pdf_books/sustainability.pdf](http://[REDACTED]/select/pdf_xls/pdf_books/sustainability.pdf).

⁷⁰ Telephone conversation between [REDACTED] of [REDACTED] and [REDACTED], [REDACTED] managing director, 26 July 2006.

4.4.3 Globe Stone Initiative

Searching the internet for corporate initiatives focused on a sustainable natural stone industry, information is found on the Globe Stone Initiative. The Global Stone Initiative (GSI) is driven by the Natural Stone Network Exchange (NSNX), a global natural stone procurement platform. The NSNX has offices in the USA, China, Hong Kong and Turkey, and services the North American and European markets. The GSI's self proclaimed objective is to establish industry-specific codes of conduct and deploy worksite monitoring to promote good labour and environmental practices in global supply chains in the natural stone industry. GSI states to encourage and promote continuous improvement of both commercial and social concerns in the natural stone industry by means of continuous recording, inspection, evaluation and communication of its goals. GSI claims to use both social and economic measures to ensure that suppliers strive to improve their current unsound practices. Currently GSI focuses on developing countries, including China, Turkey, Brazil, India, Iran, Egypt and others. NSNX says to work on developing an "Industry-Wide Collaborative Framework".

NSNX's mission statement, published on its website, reads:

'We believe that strategies based on industry-focused collaboration among multiple stakeholders and within a coherent framework hold the greatest promise for creating supportive, enabling environments that ultimately will result in improved labour and environmental standards in global supply chains. GSI's impact will be substantially greater as it is implemented within a coherent, industry-focused strategy that seeks to engage multiple stakeholders in collaborative efforts. Thus, collaborative initiatives can be used to achieve the full range of options including (a) efforts to set, extend, and enforce standards; (b) capacity building; (c) worker education and engagement; and (d) development and implementation of economic incentives for good practices.'

(<http://www.globestone.net/ENG/site/gsi.jsp> or <http://www.nsnx.com>)

NSNX states that all stakeholders should be involved in natural stone industry-wide efforts to improve environmental and labour conditions. NSNX lists: architects/specifiers; buyers (project buyers, wholesale and retail buyers; quarries and factories; workers; inspectors; exporting and Importing country trade and government organisations.

GSI's stated goals include:

- *elimination of child labour;*
- *elimination of unsafe work environments;*
- *elimination of environmentally dangerous production practices;*
- *promotion of employment of single mothers;*
- *support for women in the industry;*
- *support of education among stone industry worker families;*
- *support for sculptors and other artists to procure stone materials economically;*
- *informing, educating and training suppliers, workers, inspectors, buyers;*
- *promotion of the use of natural stone in sculpting and other art forms;*
- *increasing the use of natural stone products.*

An overview of the full CSR Model of the initiative can be found on the website:

http://www.nsnx.com/ENG/site/csr_model.jsp.

Besides the information contained on the website, not much is known about the GSI. It should be noted that the GSI's list of stakeholders does not include trade unions or civil society organisations, stakeholders that typically play an important role in genuine MSIs. GSI stresses the role of government organisations instead, and therefore seems to aim at a type of intersectoral cooperation which may be classified as a Public-Private Partnership (PPP) for the promotion of good industry practices.

4.4.4 Global Mining Initiative / International Council on Mining and Metals

In preparation for the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002, the Global Mining Initiative (GMI) was created. GMI brought together many of the world's largest mining, metals and minerals companies. It aimed to improve the industry's response to global needs and challenges. Apparently, GMI and the initiatives linked to it do not deal with natural stone production, although they may be well applicable to this specific type of minerals. The GMI is a business initiative and resulted in the creation of the International Council on Mining and Metals (ICMM), an organisation of large corporations.

The overriding aim of GMI was to reach a clearer understanding of the positive role the mining and minerals industry might play in making the transition to more sustainable patterns of economic development. The GMI initiative was headed by the nine companies belonging to the Mining and Minerals Working Group of the World Business Council on Sustainable Development (WBCSD):

In May 2002, following the publication of "Breaking New Ground", the final report of Mining, Minerals and Sustainable Development (MMSD), the establishment of the ICMM, and the close of the global conference - GMI ceased to exist as a separate entity and the coordination of activities was taken over by ICMM (<http://www.icmm.com>).

The issues supposedly covered by the GMI initiative included:

- access to land and resources;
- exploration;
- project development and secondary development impacts;
- governance of mining projects, their place in social and economic development and issues of capacity building;
- rent capture and distribution;
- mining operations;
- stewardship of resources such as water and biodiversity;
- energy use;
- management of waste;
- social and environmental aspects of mine closure;
- primary and subsequent stages of processing;
- the trade in materials produced by mining;
- how those materials are used - their consumption, recycling and disposal'.

It should be noted that while labour issues are at the core of the problems in the natural stone industry, these issues are not explicitly mentioned and do not seem to have the attention of GMI.

The International Council on Mining and Metals has the following stated goals:

1. *'Offer strategic leadership to achieve improved sustainable development performance in the mining, minerals and metals industry.*
2. *Represent the views and interests of its members and serve as a principal point of engagement with the industry's key constituencies in the international arena.*
3. *Promote science-based regulations and material-choice decisions that encourage market access and the safe production, use, reuse, and recycling of metals and minerals.*
4. *Identify and advocate the use of good practices to address sustainable development issues within the industry.'*

In order to achieve these goals, it promotes a set of principles for sustainable development in the mining industry. These ICMM principles were approved by the ICMM Council in May 2003, committing ICMM's corporate membership to measure their sustainable development performance against them. These principles are central to ICMM's Sustainable Development Framework and draw on the MMSD report. In light of the MMSD recommendations, ICMM undertook a "gap analysis" comparing current standards with relevant conventions and guidelines. These included the Rio Declaration, the Global

Reporting Initiative, the OECD Guidelines on Multinational Enterprises, the World Bank Operational Guidelines, the OECD Convention on Combating Bribery, ILO Conventions 98, 169, 176, and the Voluntary Principles on Human Rights and Security.

The ICMM Principles can be summarized as follows:

1. *Implement and maintain ethical business practices and sound systems of corporate governance.*
2. *Integrate sustainable development considerations within the corporate decision-making process.*
3. *Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by our activities.*
4. *Implement risk management strategies based on valid data and sound science.*
5. *Seek continual improvement of our health and safety performance.*
6. *Seek continual improvement of our environmental performance.*
7. *Contribute to conservation of biodiversity and integrated approaches to land use planning.*
8. *Facilitate and encourage responsible product design, use, re-use, recycling and disposal of our products.*
9. *Contribute to the social, economic and institutional development of the communities in which we operate.*
10. *Implement effective and transparent engagement, communication and independently verified reporting arrangements with our stakeholders'.*

ICMM has partnered with the UK government's Department for International Development (DFID), the United Nations Environment Programme (UNEP) and the United Nations Conference on Trade and Development (UNCTAD) to develop an online library of good practices that support ICMM's principles of sustainable development (<http://www.goodpracticemining.org>). Collaboration with other type of stakeholders such as trade unions or NGOs does not seem to be high on the agenda of ICMM.

4.4.5 Communities and Small-scale Mining

The Communities and Small-scale Mining (CASM) knowledge centre is chaired by the UK government's Department for International Development (DFID) and housed at the World Bank in Washington D.C. CASM has as stated mission *'to reduce poverty by supporting integrated sustainable development of communities affected by or involved in artisan and small-scale mining in developing countries'* (<http://www.casmsite.org>). CASM was launched in March 2001 in response to international recognition of the need for an integrated approach to address the challenges facing ASM communities and for improved coordination between institutions funding and executing assistance. CASM began as a multi-donor networking and coordination facility that would engage with practicing miners, their associations and communities, governments and non-governmental organisations, and development assistance agencies (<http://www.casmsite.org>).

A major aim of CASM is to collect and share the lessons learned from the past, and to contribute to the improvement of new efforts. CASM is developing good practice toolkits and guidance notes for various stakeholder groups. It also supports and organizes local, regional and international learning events to assist in the dissemination of best practices. CASM's website contains a database with publications on small-scale mining, projects, and contact persons.

CASM covers all types of mining, but few of its activities are not specifically related to natural stone quarrying. The knowledge centre contains very little information on small-scale natural stone quarries.

4.4.6 Federation of Indian Mineral Industries

The Federation of Indian Mineral Industries (FIMI) has recently established a division for the promotion of Corporate Social Responsibility. For this purpose, FIMI is in contact with the India

Development Foundation (IDF), an Indian NGO. The CSR initiative of FIMI and IDF is still in a preparatory phase, including a study on CSR in the mining sector in India. Activities aimed at sensitisation of FIMI members are started up. FIMI claims its vision on CSR is formulated from a stakeholder perspective. Besides the involvement of IDF, it is not clear if/how stakeholder will be able to play a role. Although labour issues, child labour, environmental concerns and community impacts. Are explicitly mentioned as areas of concern, it is not yet possible to say how FIMI will want to address these problems.

Clearly, some of FIMI's policies continue to rely on charitable community involvement only; such as FIMI's "Guidelines on community development for small, medium and large mining companies". Furthermore, although the FIMI also represents the natural stone quarrying and processing industries, its CSR and community development initiatives seem primarily focused on major minerals such as iron ore and cement (<http://www.fedmin.com>).

4.4.7 Rajasthan Department of Mines & Geology (DMG) Eco-friendly mining guidelines

The Department of Mines & Geology (DMG) of the state of Rajasthan, one of India's main quarrying centres, has established a set of Eco-Friendly mining guidelines. It appears that Rajasthan's DMG, although dealing with a broad range of minerals, pays considerable attention to natural stone because of the importance of this sector in the state. Officially, the department requires all lease holders to submit Eco-Friendly mining plans in compliance with DMG guidelines:

'For implementing the provisions of various laws related with Environment Protection and Eco-Friendly mining in an effective manner, every mining lease holder is required to prepare and submit Eco-Friendly mining plan to concerned Assistant Mining Engineer/Mining Engineer.'
(<http://www.dmg-raj.com>)

However, the actual implementation of such plans is a rare exception. The guidelines may nonetheless offer considerable guidance when determining environmental standards, as they are quite comprehensive and detailed. The full text of the guidelines is given below.

1. Whenever the lessees dig out the available top soil they may store it separately in such a manner that it could be utilized for stabilizing of dumps created by depositing over burden, by intensive plantation.
2. For minerals like Gypsum, brick earth etc. where mining is done for very shallow depth (1m to 5m), waste & overburden generated during mining operations, must be refilled. After levelling, top soil collected must be spread over it and suitable plantations should be done.
3. All lease holders should check the water channels in their mining lease areas and clear/clean them before the rains start. Water should flow in its natural path and there should be no obstruction created by way of unplanned mining activities.
4. If some diversion of water channels becomes necessary due to availability of mineral in lease area at a particular location only, new drains following the contours be constructed by lessees, so that water flows un-obstructed to main water bodies/ponds/tanks/natural reservoirs.
5. The overburden should not be dumped in such a manner that it flows with water in the nearby tanks, reservoirs and ponds etc. The leaseholders should dump the overburden in such a manner that it does not gets washed away to the nearby water tanks and lakes etc. during the rainy season.
6. All mining lease holders/quarry license holders are requested to plant a specific number of trees based on their area of lease so that they survive for longer time to come. It has to be ensured here that the mine owners should report the achievement of the target of tree plantation by way of giving number of plants that survive and not by the number of plants planted by them.
7. The lessees of major and minor minerals having areas more than 5.00 hectares shall develop thick forestation zone on the boundary of lease in at least 10 meter strip. This can be achieved in steps and exact plan should be submitted to ME/AME. The plan must contain year wise

forestation programme including site and nature of plantation. It shall also be duty of lessee to maintain growth of these plants and survival rate should not be less than 80%. Proper protection of these plantation is also to be ensured by the lessee.

8. The norms for plantation for each lease holder /quarry license holder would be as under:

S.No.	Category	Norms
1	Major mineral lessee	5 plants/ hect. or part / year
2	Marble, serpentine and granite leases and Q.L.	20 plants / hect. or part / year
3	Other minor mineral leases and Q.L.	10 plants / hect. or part / year
4	Q.L. of minerals other than marble and granite having area less than 1.00 hectare	5 plant / Q.L. / year

9. In all leases that are located adjacent to forest areas, a safe distance as provided in the rules should be left by leaseholders between the actual mining area and the forest boundary. The lessees of such leases should plant a specific number of trees to create a green buffer zone between the mining area and the forest. Such lessees may also construct loose stone/Pakka stone wall showing their working boundaries between the forest and the lease so that there is no possibility of even unintentionally movement towards the forest areas.
10. Whenever mining reaches to the water table, the leaseholder should dig a separate well in the lease area itself in which water from the mining pit is disposed with the objective of recharging the water table. By doing so there would be no wastage of ground water due to mining operations close to the water table.
11. Water pollution and air pollution clearances, wherever required are duly obtained by the lessees from the State Pollution Control Board.

4.5 Options for a Multi-Stakeholder Initiative (MSI)

Multi-Stakeholder Initiatives (MSIs) refer to voluntary initiatives for the regulation of business operations, often in a specific industry or product chain such as wood, flowers, tea or clothing. MSIs are usually set up at the international level and bring together actors from various sectors of society: companies, private sector (industry) organisations, civil society organisations (NGOs and trade unions). They are effectively a form of self-regulation that fills the gap of insufficient legal regulation. The issues addressed by MSIs vary from specific issues only, such as child labour, to a variety of CSR issues. Examples of MSIs include:

- Ethical Trading Initiative (ETI);
- Fair Wear Foundation (FWF);
- Forest Stewardship Council (FSC);
- Marine Stewardship Council (MSC);
- Better Banana Project;
- Just Tea.

In general, MSIs involve the following steps and activities:

1. Agreeing a **Code** for business behaviour that has to be met or aimed at.
2. Establishing **operational criteria** for implementation of the code, such as transparency requirements, monitoring and independent verification.
3. Start of **implementation** of the code by the companies.
4. Continuous **monitoring** of implementation and improvements. This is mainly a task for the companies themselves, but NGOs and trade unions can have a role in it as well.
5. **Verification** of compliance with the code or agreed interim targets. This is usually done by independent actors: MSI staff or auditors appointed by the MSI. Agreement on verification procedures and the choice of auditors is often a major point of discussion.

6. Making **plans for improvement**, e.g. corrective action plans, when companies are not yet in compliance. These include clear time-bound targets.
7. **Certification** of the company or the product when all conditions are met and have been independently verified. Some MSIs do not aim at certification, but focus on improvement plans only. This prevents unrealistic expectations, while still promoting increased commitments from companies in collaboration with civil society organisations⁷¹.

The success and limitations of MSIs are highly dependent on the structure of the industries and/or product chains concerned. Drawing on existing MSI experiences, on the supply side the natural stone sector perhaps comes closest to the tea sector for several reasons:

- production chains that involve production and one or two processing stages;
- large and small-scale production coexist and both are significant;
- production is sourced from a specific area because geographic locations matter. Hence, long-term supply relationships exist.

On the demand side, the Forest Stewardship Council (FSC) may provide some guidance, as natural stone products include construction materials like tiles, kitchen counter tops, doorsteps, and pavement materials. A number of retail channels for FSC-certified wood and natural stone products therefore tend to coincide. These include DIY stores and builders merchants for consumers, as well as supplies to construction firms and building contractors. FSC started out with an exclusive focus on environmental criteria for forest management. At a later stage social criteria were added. The FSC aims at certification of mainstream products by independent auditors accredited by the initiative. The FSC label is well-known and FSC-certified products now account for substantial market shares in the Netherlands.

Some MSIs are not limited to a specific sector. The Ethical Trading Initiative (ETI) is the most well-known example. It is a UK-based collaboration between companies, NGOs and trade unions that promotes best practices for the implementation of a code on employment conditions. The initiative does not include the certification of products or verification by the MSI itself. The participating companies are responsible for the establishment and implementation of a code of conduct and monitoring performance. They commit to piloting projects for the implementation of the code. The multi-stakeholder character of the initiative lies in the collaboration between the companies and civil society organisations in these pilot projects and the reporting of company progress to all ETI members.

For natural stone products, the ETI's exclusive focus on labour standards is too narrow, as environmental impacts and business integrity also constitute issues important to the sector. On the other hand, an MSI pilot project and progress towards a commonly agreed standard is much more feasible for natural stone than a certification initiative. In this regard, it is interesting to note that several Dutch multinationals have expressed an interest to join or set up a multi-sector MSI to improve performance as measured against the OECD Guidelines for Multinational Enterprises in their supply chains. The supply chain for natural stone (from India) might well fit into such an initiative. In that case, specific norms might be added for each (sub)sector, while all participating companies join in a single multi-stakeholder dialogue, subscribing to a general CSR code and a system of pilot projects and monitoring.

A specific feature of the natural stone industry that has to be taken into account is that importers or processing plants can never source their stone from a single quarrying company, unless it is a company large enough to own a range of different quarrying sites or to source from a range other quarries. The underlying reason is that the different types of stone come in a large variety of colours. Retailers and importers like to offer their customers a wide choice, whereas single quarries (or groups

⁷¹ For more information about experiences with MSIs, see the Dutch SOMO publication "Samenwerking tussen bedrijfsleven en maatschappelijke organisaties: ervaringen met multi-stakeholder initiatieven", May 2003.

of quarries in the same district) usually only yield stones of a single colour. An MSI relying on a small group of preferred suppliers would therefore be problematic.

Another important aspect of the structure of the natural stone industry is that the size of quarries and quarrying companies varies enormously. As mentioned in the previous chapters, leases can be very small and operate with less than 10 workers, whereas very large quarries employing over a thousand people also exist. A general problem of certification requirements, and hence also of MSIs, is that these impose a relatively large burden on small-scale producers. The costs of monitoring and auditing are usually prohibitively high for small-scale enterprises. Furthermore, they may not be able to meet high labour and environmental standards, because they lack the resources for implementation and because the required investments (such as protective equipment and cranes) yield strong economies of scale. As a consequence, certification may not benefit the most vulnerable groups and even make them worse off. In any MSI for natural stone, this problem requires special attention.

A similar situation exists in the coffee sector. This has resulted in different types of certification, with different goals and approaches. On the one hand, Fair Trade labelling aims to support disadvantaged small-scale producers. The initiative has a distinct development goal and pays a guaranteed price and premium. The Fair Trade label is displayed on all products, which are purchased by a small niche-market of ethical consumers that are willing to pay higher prices. On the other hand, broader certification initiatives such as SA8000 for labour standards aim at guaranteeing basic worker rights and do not set guaranteed prices. Companies that apply this type of standards operate in mainstream markets and usually do not print a label on their products. The Fair Trade model is more supportive for smallholders and co-operations of disadvantaged producers, but is unable to cover a large share of the market. A similar trade-off exist for certification of natural stone products from small-scale quarries.

Finally, a crucial element in the MSI approach is the involvement of Southern partners and the appointment of auditors. In order for MSI participants to constitute a legitimate representation of interests, Southern civil society organisations have to be included. Currently Indian NGOs active in the natural stone industry seem to lack the capacity for this, while workers and small-scale producers are largely unorganized, and trade unions do not exist. Organisational support will therefore be a prerequisite. Furthermore, coordination of potential initiatives in the sector is necessary to reduce the burden on Southern organisations.

4.6 Current MSIs and civil society initiatives in the natural stone sector

4.6.1 Dutch Initiative Sustainable Natural Stone

One of the most methodical initiatives in this field is the project on sustainable natural stone set up by the India Committee of the Netherlands, together with *Stichting Natuur en Milieu*, Research Centre for Multinational Corporations SOMO, and CREM, a specialised bureau for sustainable development. In November 2005, a round table on sustainable natural stone was organised with the participation of the two main trade organisations and a number of individual natural stone companies. The Working Group on Sustainable Stone was the result of this round table. Since its inception the Working Group has met three times for in depth discussion on the social and environmental issues occurring during the extraction and processing of natural stone in developing countries, and the role of Dutch/European natural stone companies in addressing and preventing these problems. Main challenge is how to give hand and feet to the concept of chain responsibility. To this end, a 'CSR frame of reference for natural stone products' was developed (annexed).

4.6.2 Xertifix

Xertifix is an innovative German scheme dealing with CSR issues related to the production of granite tomb stones in India. Xertifix classifies as a multi-stakeholder initiative since stone importers, stone exporters and civil society organisations (both German and Indian) have their part in the scheme. Some of the stone traders interviewed in the Netherlands had heard of this initiative, but no one was familiar with, or, for that matter, interested in, the precise scope, range and contents of this initiative. Xertifix focuses on the elimination of child labour and bonded labour throughout the supply chain of tomb stones, from the granite quarries in South India upwards. Xertifix promotes primary education and vocational training in order to rehabilitate child workers and to prevent child labour and slave or bonded labour. Xertifix strives to bring child labour free granite on the German market and raises awareness among the German public for socially responsibly manufactured products of natural stone. Xertifix issues a qualified certificate for gravestones, guaranteeing the observance of social minimum standards. Standardisation (or possibly fusion) of existing seals and certificates is a point of attention. At the Indian end, a structure for effective control is being set up. Xertifix India is formed by a group of professionals working on child development and child rights as well as of stakeholders in the quarry communities. The core of Xertifix India is formed by an organisation called the Quarry workers and rural integrated development society (QWARIDS), based in Bangalore. Co-operation with suitable specialised local welfare organizations is high on the agenda. Xertifix India will look after the freed child labourers.

An agreement is signed between Xertifix Germany and a German stone importer. The stone importer strives to only purchase Indian stone with a Xertifix certificate. A 3% higher price is paid (when the stone leaves India, FOB), which results in an average price increase 1.5% for the end customer. The stone importer actively participates in carrying out social improvement in India. The Indian stone quarry allows Xertifix India to come and inspect the value chain, unannounced and at any time, if need be. Only the controlled materials carry the Xertifix certificate.

4.6.3 Mine Labour Protection Campaign

The Mine Labour Protection Campaign (MLPC), an Indian NGO based in Jodhpur, Rajasthan, works towards a deliberate change within the mining society. MLPC, especially over 2.5 million mine workers now engaged in unorganized mine sector in Rajasthan should be given their basic rights. It is an extremely exploitative situation with all kinds of violation of law and breach of human rights. For over a decade MLPC has been engaged in organizing mineworkers in Rajasthan, which constitute some of the most deprived sections of the society.

MLPC works with the mineworkers to enable them to become the owners of the mineral resource. MLPC facilitate registration of cooperatives and mining leases. MLPC supported cooperatives have successfully secured mining leases and have set up models of fair trade. The idea of forming cooperatives for mining activity was a new experience in India. This endeavour has turned out as good model, which has received recognition by the government, development agencies and the civil society. Efforts are on to carry these models in other mining areas of Rajasthan.

The cooperative is an assemblage of mineworkers that undertake activities as an enterprise to earn profit out of their labour and the profit so earned is equally distributed to cooperative members, the mineworkers. Since acquiring leases to extract minerals, the cooperatives have been earning considerable profit. The average earning of each worker has increased from Rs 1700 to Rs 4000 per month. With the support from MLPC 10 cooperatives of mineworkers in 7 districts of Rajasthan have been registered with the seed capital provided by MLPC for mining leases. 4 more cooperatives, which have applied for the mine leases would soon start functioning. The numbers of mineworkers, reached through the cooperatives are over 500 including 55 female members.

The mining leases operated and managed by these cooperative members are ensuring income in return of members' labour and have created sense of empowerment and their rights besides feeling of security and bringing down exploitation. Cooperatives have learnt waste disposal strategy, compensatory forestation and to follow mining rules. These model cooperatives have set examples of

justice and fair trade benefiting not only its members but have helped raising the wages of workers in other mines and to provide better working conditions.

4.6.4 European Eco-label

The European Eco-label is the European environmental certificate for non-food products and services. The European Eco-label is attached to a product or service when it fulfils all environmental criteria. The label informs consumers about the products and services they use. Companies can by means of the label demonstrate that sustainability is part of their core business. However, the Eco-label is only looking into environmental issues, social aspects are not taken into account. For the product group hard floor covering detailed criteria have been drawn up. So far, six companies (all from Italy and Spain) are sporting the Eco-label's 'green flower', but only for ceramic tiles. The green flower on hard floor covering tells you that

- water and energy consumption during manufacturing are limited;
- residues of dangerous substances for health and the environment are minimised;
- harmful emissions to air and water are limited;
- the product includes waste management instructions.

For more information, see <http://www.eco-label.com/default.htm>.

4.6.5 Milieukeur SMK

The Dutch Foundation *Stichting Milieukeur* or SMK supports organisations and companies in their efforts to work according to corporate social responsibility principles. SMK seeks to strike a balance between societal interests and market demands. SMK runs five programmes, looking into agro/food, non-food, the European Eco-label, greenhouses and sustainable site management. Within the non-food programme, a certification scheme for furniture has been developed. The furniture product group includes (kitchen) counter tops. Requirements are formulated for a whole range of materials, including (natural) stone. In the detailed certification scheme for furniture requirements for stones are formulated, concerning, specifically, the extraction of natural stones. The company applying for the SMK furniture certification has to submit documents from its natural stone supplier demonstrating that a landscape rehabilitation plan has been drawn up for the quarries where the stones are extracted from. This rehabilitation plan should be based on an environmental impact assessment conform the EU guideline 85/337, or an equivalent environmental investigation. For further details see: http://www.milieukeur.nl/upload/schema/mrschema_nl7.pdf.

4.6.6 Elim Foundation

The Dutch Elim Foundation (*Stichting Elim*) established its first contacts with slate quarry workers in Markapur, South India, many of whom were performing bonded labour. A local non-profit organisation was established to run a slate quarry of its own under auspices of the Elim Foundation. The aim of this project was to provide a more responsible source of employment in quarrying for poor people and provide basic education for their children.

The first container of slate products was exported in 1995. In 2001, a failed attempt was made to hand over management of the quarry to the workers. In 2003, the quarry's exploitation was taken over by another organisation related to the Elim Foundation. Marketing of Markapur Stone by the Elim Foundation continues. The major beneficiaries of the project are poor Christians from nearby local villages, who constitute over 50% of all workers in the quarry (<http://www.elim.nl>).

Although this project has delivered socio-economic benefits to a specific population in India, it offers little value as a model for more systematic improvements in natural stone quarrying. The project aims at a niche-market only. Marketing is limited to a very specific group of customers, namely Elim supporters in the Netherlands. The project seems to be linked to missionary efforts.

The initiative also seems to be limited to worker welfare, leaving out environmental issues.



Conclusion and recommendations

The quarrying and processing of natural stone is characterised by major social and environmental problems. Desk study of sources describing the situation in India, after China the most important natural stone producing and exporting country in the world, clearly reveals this. Problems include bonded labour, child labour, hazardous and unfair working conditions and a series of environmental issues such as land degradation.

National legislation as well as international standards are being violated on a large scale. From a legal perspective this is a major challenge, in particular for the authorities of natural stone producing countries.

Also from a social corporate responsibility perspective this situation demands a pro-active approach. Natural stone companies, wholesale traders as well as processing companies, have a role to play.

The global natural stone trade has not yet taken up this challenge in any serious way. All existing initiatives that are relevant for the natural stone sector have fundamental flaws. A persistent weak point of such initiatives is that the concept of chain responsibility is barely developed or implemented beyond the first supplier.

However, there are good reasons and opportunities for change. Natural stone companies increasingly realise that corporate social responsibility is part and parcel of good entrepreneurship.

Especially the initiative set up by the India Committee of the Netherlands, in collaboration with Natuur en Milieu, CREM and SOMO is a comprehensive effort to address social and environmental problems in the supply chain in an integrated way. The Working Group on Sustainable Natural Stone offers a platform to Dutch companies and trade associations to develop and implement viable mechanisms to clean up the international supply chain of natural stone. The active participation of companies and trade organisations in the Working Group is of the utmost importance and is very much welcomed. The initiative will continue to look into and learn from other relevant (international) initiatives.

Dutch as well as European natural stone companies and trade associations are invited to join this initiative. The Dutch Sustainable Stone Initiative calls upon other actors in the natural stone business, including the government, to tailor its purchasing policies and practices to the norms outlined in the CSR Frame of Reference for natural stone products that is currently being developed.



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Annexes



Annex 1:

Concept CSR Frame of reference for natural stone products of the Dutch Sustainable Stone Initiative

Principles

- Basis for a CSR policy is relevant national and international legislation.
- CSR is part and parcel of corporate management.
- Chain responsibility extends from the beginning of the supply chain (stone quarry).
- Transparency and reporting to third parties, including in production countries.
- Buyers take responsibility for improving.
- CSR can affect purchasing policies and practices (price, delivery time).
- CSR requires a process approach, corrective action plans need to be drawn up.

Norms

Labour	
NO	RIGHT TO
Forced labour	Freedom of association
Child labour	Collective bargaining agreement
Discrimination	Living wage
Excessive overtime work	Workplace safety
	Security of employment
	Housing

Environment	
NO	YES
Negative impact on water system	Efficient extraction of natural stone
Illegal emission of dust to water and air	Re-use of water
Land degradation	Re-use of waste material
	Land rehabilitation

Society		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>NO</p> <p>Illegal mining</p> <p>Corruption, bribery</p> <p>Negative impact on local community</p> </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>RESPECT FOR</p> <p>Licenses</p> <p>Payment of taxes and royalties</p> </td> </tr> </table>	<p>NO</p> <p>Illegal mining</p> <p>Corruption, bribery</p> <p>Negative impact on local community</p>	<p>RESPECT FOR</p> <p>Licenses</p> <p>Payment of taxes and royalties</p>
<p>NO</p> <p>Illegal mining</p> <p>Corruption, bribery</p> <p>Negative impact on local community</p>	<p>RESPECT FOR</p> <p>Licenses</p> <p>Payment of taxes and royalties</p>	

Implementation

- Internal monitoring of compliance to code of conduct, by buyer.
- External verification of compliance to code of conduct, by an independent party, e.g. a local NGO.
- Complaint mechanism at the workplace.
- Training of employers and workers concerning labour rights.

Annex 2:

Co-ordinates of Xertifix

Xertifix Germany
 Director Mr. Benjamin Pütter
 Vaubanallee 20
 79100 Freiburg,
 Germany
 T +49 - (0)761 - 401 96 06
 F +49 - (0)761 - 400 42 26
 email: info@xertifix.de, web: <http://www.xertifix.de>

Xertifix India
 Quarry workers and rural integrated development society – Qwarids
 Director Mr. J. Manoharan
 No. 63 , K.S.F.C. Layout,
 Oil Mill Road
 St Thomas Town Post
 Banagalore 560084
 Tel: 00-91- 80-25460206

German companies that have obtained the Xertifix certification:
 Natursteinwerk Bawinkel GmbH
 Das Granitwerk
 Gewerbegebiet 1
 D-49844 Bawinkel
 Germany
 Tel: +49 5963 9403-0
 Fax: +49 5963 9403-33
 email: info@nbgranit.de, web: <http://www.nbgranit.de>

Signum GmbH
Friedhofstraße 67
D-79106 Freiburg
Tel: 0761 - 27 37 72
Fax: 0761 - 28 74 55
email: info@signum-grabzeichen.de, web: <http://www.signum-grabzeichen.de>
Signum has obliged itself to solely sell/trade Xertifix certified stones.

The Xertifix Licence Agreement can be downloaded from:
http://www.xertifix.de/siegel/license_agreement.shtml.