



THE  
CIMPOR  
GROUP

**PORTUGAL**  
**7.2\***

million t/year

- 3 Cement plants
- 1 Hydraulic Lime plant
- 2 Cement Grinding units
- 58 Ready-mix concrete units
- 12 Aggregates production units
- 2 Dry mortar plants

**SPAIN**  
**3.1\***

million t/year

- 4 Cement plants
- 4 Cement Grinding units
- 85 Ready-mix concrete units
- 18 Aggregates production units
- 4 Dry mortar plants

**MOROCCO**  
**1.3\***

million t/year

- 1 Cement plant
- 5 Ready-mix concrete units

**BRAZIL**  
**6.5\***

million t/year

- 6 Cement plants
- 2 Cement Grinding units
- 35 Ready-mix concrete units
- 3 Aggregates production units
- 2 Dry mortar plants

**CAPE VERDE**

- 1 Bulk cement unit
- 3 Ready-mix concrete units
- 3 Aggregates production units

**SOUTH AFRICA**  
**1.5\***

million t/year

- 1 Cement plant
- 1 Cement Grinding unit
- 1 Slag Grinding plant
- 6 Ready-mix concrete units
- 3 Aggregates production units



## SCOPE OF REPORT

CIMPOR's 2010 Sustainability Report is a complementary publication to the Group's Annual Report and Accounts for the period in question.

The 2010 Sustainability Report only covers the Cement activity of the Group in the Business Areas of Portugal, Spain, Morocco, Tunisia, Egypt, Turkey, Brazil, Mozambique, South Africa, Cape Verde, China and India.

Exceptionally, information will be disclosed on other areas of business activity besides cement, notably in the chapters on Human Resource Management and Occupational Health and Safety. Explicit reference will be made to such fact in those cases.

### TUNISIA

**1.7\***

million t/year

- 1 Cement plant
- 1 Aggregates production unit

### TURKEY

**3.0\***

million t/year

- 4 Cement plants
- 2 Cement Grinding units
- 17 Ready-mix concrete units
- 2 Aggregates production units

### EGYPT

**4.0\***

million t/year

- 1 Cement production complex
- 1 Ready-mix concrete unit

### MOZAMBIQUE

**0.7\***

million t/year

- 1 Cement plant
- 2 Cement Grinding units
- 3 Ready-mix concrete units

### INDIA

**1.1\***

million t/year

- 1 Cement plant

### CHINA

**5.3\***

million t/year

- 2 Cement plants
- 1 Clinker plant
- 2 Cement Grinding units

(\*) - Annual Installed Capacity of Cement Production with Own Clinker.

## A Sustainable Future

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Aware of the impact that decisions made today have on the future, we at CIMPOR have long been committed to building sustainability into all of our activities. Transparency and ethics in doing business, respect for the environment and for human values, and investment in the communities of which we are a part are some of the principles that guide us.

CIMPOR. Our soundness is in your life.





# STATEMENT FROM THE CEO



To be better, we have to continue investing every day in all the pillars of sustainable development.

Making wealth building and preservation of natural resources compatible and promoting fair and inclusive human development in all our geographical areas is a priority in CIMPOR's management. We believe that sustainable development, based on excellent technical and economic performance, on the best social and environmental practices and on respect for local cultures, is the only way of ensuring consistent growth of the company and guaranteeing that it will be capable of responding appropriately to future challenges.

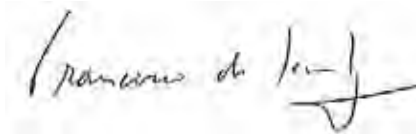
Operational performance in 2010 mirrors this collective attitude at CIMPOR in the face of the numerous challenges we face on a day-to-day basis. The best ever result, posted in a less than positive international economic climate, is the result of consistent work to improve efficiency and boost the capacities of the organisation, of investment in a balanced asset structure and a focus on financial solidity.

Past performance, for which the excellent team that achieved it should be proud and congratulated, should be seen as an incentive to help us move more quickly towards the target we have set. At CIMPOR we are demanding with our standards. We don't just want to do better. We want to be the best.

The road to excellence is by a definition a road with no end. As each stage is achieved, another even more ambitious one replaces it. To be better, we have to continue investing every day in all the pillars of sustainable development. Alongside investment in the solidity of the company, we will continue to focus on research and development, on innovation, on the safety and wellbeing of our staff and service providers, on the responsible use of natural resources and reducing the risks inherent to our business. New ventures that will take this dynamic of change even further will be added to the projects underway and those that have just been launched.

Because the value generated by CIMPOR is a value shared with society, we also want to be the best in terms of corporate citizenship. Today we play a significant role in the development of local communities, and in the future we can do even better by continuing with current initiatives and developing new education, professional training, social entrepreneurship, cultural promotion and preservation of historical heritage, social assistance and promotion of human rights.

With this report we aim to provide some information about the work that CIMPOR carried out in 2010 based on the objective of sustainability, in return for the trust our stakeholders have placed in us and committing, in 211, to continue on our path of excellence, based on ethics, responsibility and transparency, all of which are values that we cherish and that are part of our company's DNA.



Francisco de Lacerda

**Chief Executive Officer**

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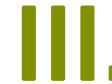
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## TIE GROWTH TO THE WELL-BEING OF SOCIETY

We believe we can contribute to a better world, respecting and improving the living conditions of those around us without jeopardising our economic growth. To meet this objective we seek to achieve perfect harmony between the development of the business, the conservation of the environment and the well-being of society. This is the secret of our success, which we do not hide from anyone.

**CIMPOR. Our soundness is in your life.**






# THE CHALLENGE OF SUSTAINABILITY



## THE CHALLENGE OF SUSTAINABILITY



We believe that it is possible to positively contribute to the well-being of society in an integrated manner, while also developing our business.

Commercial companies, increasingly aware of the specific concerns and expectations of society in general in relation to the business world, not only in respect of economic issues but also development and social well-being aspects as well as respect for the environment, have demonstrated their ability to change the rules of the game, irrefutably taking on the role of leaders in this process towards a more sustainable society. To achieve this they have been gradually adapting their ideals of responsibility to the environment, so that they are able to integrate these important aspects into the foundations of the proper business model, thereby ceasing to consider them as additional to the specific core business.

Gradually, the idea of unlimited economic growth where everything can be sacrificed has been replaced by clear awareness of the limits of that growth in the old format and the importance of inventing a business model that, without ceasing to generate the necessary economic value, is capable of creating long-term conditions that ensure the well-being of current generations, without this being achieved at the expense of exacerbating living conditions in the future.

Naturally, as we at CIMPOR believe, this new awareness sets us new challenges. The intangible assets of our company, which include aspects as diverse as intellectual capital, research & development and innovation, the transparency of the governance system, relations with stakeholders and social and environmental responsibility, must occupy a growing share in the long-term creation of value and be increasingly regarded as a measure of the performance of our system of business organisation. The sustainable development of a business has to do with the adoption of a global business model that is both economically viable, socially respectable and environmentally responsible, with its very survival depending on the correct harmonisation, in a balanced and transparent manner, of the level of excellence of its economic, financial and technical performance with highly challenging environmental, social and ethical principles.

Hence, a whole range of issues related to occupational health and safety, climate change, natural resource consumption, air emissions, impacts on communities and land use, employment and regional socioeconomic development already form part of the culture and concerns of CIMPOR. We are convinced that we can contribute positively and in an integrated manner to the well-being of society and develop our business at the same time, and



The harmonisation of economic, financial and technical excellence with environmental, social and ethical principles is one of the pillars of the corporate culture of CIMPOR and also a fundamental prerequisite for the Group's development and future success.



that, as Charles Handy says, "the companies that survive longest are those which discover that the unique attribute they can give the world besides growth or money is their excellence, respect for others, or their ability to make people happy. Some people call these things a soul."

#### CONCILIATE DEVELOPMENT AND SUSTAINABILITY

Four essential values that allow one to conclude that a company is viable are the explicit recognition by the management of the need to advance in the direction of sustainable development, the internal integration of new values such as sustainability, long-term vision, diversity, frank and open dialogue with stakeholders, integrity and responsibility, taking stakeholder satisfaction into consideration as a decision-making variable, and the relationship between sustainable development and value creation. Competing successfully means being able to differentiate itself from competitors by creating business models that allow value creation and the appropriation of a significant portion of success in a sustainable manner over time and that

is accepted by the markets and surrounding structures. Success is based on the acquisition, management and development of some resources and unique capabilities that comply with three basic principles: being valuable, difficult to imitate and difficult to replace. Our success and our ability to create value over time depends on our being able to appropriately manage the inevitable tensions that we are faced with every day between the short and long term and the business of today and tomorrow, on the one hand, and internal aspects and their relationship with the external environment, on the other, so that we may consider new ideas and perspectives.

In this sense, the harmonisation, in a balanced and transparent manner, of the level of excellence of economic, financial and technical performance with very demanding environmental, social and ethical principles allows this major priority to be achieved, not only constituting one of the pillars of the corporate culture of CIMPOR but also a fundamental prerequisite for its development and future success.



The programmes to promote sustainability policy have the aim, besides ensuring knowledge of the values and principles, of fostering their assimilation and practice by all employees of CIMPOR.

## CORPORATE GOVERNANCE AND CONDUCT

No company guarantees appropriate transparency and credibility today without a good system of corporate governance.

Hence, CIMPOR seeks to adopt the Best Practices in Corporate Governance and complies with legislation in force, especially the CMVM Regulations and Recommendations, as presented in detail in the Annual Report 2010.

Ensuring compliance with other local, national and international laws, regulations, codes, guidelines and recommendations, in addition to the above-mentioned, is part of our policy of adopting the best practices of corporate governance and the strict observance of a set of universally accepted ethical values. Our Code of Corporate Ethics and Irregularities Reporting Regulation, published in 2006, are part of a set of documents that regulate many of these issues and define rules of behaviour, both internally and in relations with foreign countries. These rules constitute an important benchmark within CIMPOR.

A few years ago we started a journey towards the implementation of internal programmes to promote the values and ethical principles that govern our sustainability policy, the moral codes of conduct, respect for human rights and other socially accepted practices, to address this issue internally in a systematic and disciplined manner through daily actions of communication and information in cascade through the hierarchical lines and also through internal and external channels.

Accordingly, it is very important that all our employees, besides knowing those values and ethical principles, respect them and incorporate them into their daily lives, since the image of the Company will be reflected through them and their attitudes.

CIMPOR has numerous standard channels of communication and ways of reaching all employees, to convey consistent messages: Manager Meetings at the corporate level and within the respective business areas, the CIMPORnet intranet, CIMPOR News, BBT-Technical Bulletin, CIMPOR Management Technical Training Programmes, internal working groups, regular Technical Visits to Operational Units, Internal and External Audits, among others.



The Internal Audit Office (GAI), a corporate body of CIMPOR, assists the Organisation in achieving its objectives, through a systematic approach to assessing the effectiveness of risk management, control and the governance processes, and also encompassing integrity and ethical values.

Part of the data published in the Annual Report (financial information) and Sustainability Report (e.g. OHS, CO<sub>2</sub>, fuel and raw materials, industrial costs)

The strategic alignment of the structure and management systems is essential in CIMPOR for the coordination of its business activities and the motivation of employees.

and annually reported by the Business Units are also directly or indirectly checked by independent external entities.

Furthermore, there is an annual programme of technical visits by specialised staff of the CIMPOR corporate Technical Centre (CIMPOR TEC), which verifies the quality of the data reported, the internal implementation of established measures and compliance with the defined goals.



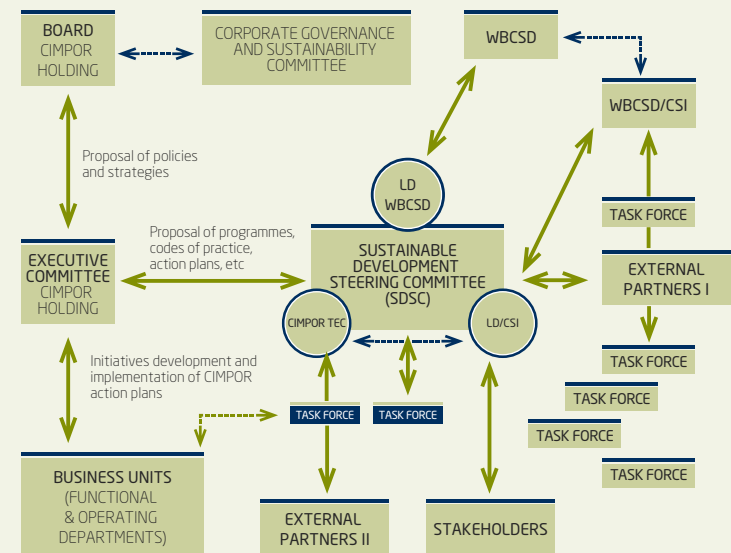
**SUSTAINABILITY ORGANIZATION IN THE CIMPOR GROUP**

**SUSTAINABLE DEVELOPMENT STEERING COMMITTEE (CPDS)**

On establishing the commitment of the leadership, companies need to embark on their sustainability strategy through adequate organisational structures, processes, performance measurements, rewards, culture and human resources.

The alignment of strategy, structure and management systems is essential for CIMPOR, both in the coordination of activities and the motivation of employees. The Steering Committee for Sustainable Development (CPDS) was created to ensure the implementation and monitoring of internal initiatives concerning sustainable development and the commitments made in this field.

This committee, headed by the Chairman of the Board of Directors of CIMPOR, is a platform that analyses, monitors and gives priority to sustainability from a functional perspective, helping to ensure that sustainability policy is aligned with the strategic objectives of CIMPOR. This committee also ensures the fulfilment of the individual commitments made internally as well as all the targets set in the context of our participation in the Cement Sustainability Initiative and the WBCSD. It formalizes the objectives related to sustainable development in the decision-making process, ensures the standardisation among the subsidiaries of CIMPOR of reporting activities in the sustainability field, and contributes to the definition and implementation of a policy of effective and consistent internal and external communication in this field.





CIMPOR's membership of the WBCSD, since 1997, represents one of the important milestones of our recent history, forming part of the partnership policy in which we intend to engage more in the field of sustainability.



#### INTRA-GROUP OVERSIGHT COMMITTEE (CIA)

In addition to meetings of the **Sustainable Development Steering Committee**, the **Intra-Group Oversight Committee** meets five to six times per year, when convened by the Executive Committee of the CIMPOR holding company. These meetings are intended to discuss and approve corporate initiatives that also include those concerning sustainability, and they assess the degree of progress made in the implementation of those initiatives compared to internally determined goals.

#### CORPORATE SUSTAINABILITY DIRECTORATE (DSGC)

At the end of 2010, the Sustainability Directorate of the CIMPOR Group (DSGC) was established, constituting a new stage in the internal organisation for sustainability. The mission of this directorate is to develop and implement, in the Cement Business Area, the CIMPOR Sustainable Development Agenda, the adoption of Sustainability Best Practices and challenge the various Operational Units (OUs) to improve their performance in sustainability.

#### WBCSD AND BCSD PORTUGAL

The CIMPOR Group's accession in 1997 to the WBCSD – **World Business Council for Sustainable Development**, an organisation with over 200 members worldwide sharing an identical commitment to the principles of sustainable development, represents one of the milestones of our recent history, forming part of the partnership policy that we intend to increasingly involve ourselves with.

In the same vein, the Business Council for Sustainable Development (**BCSD Portugal**) was founded in 2001 on the initiative of CIMPOR and 35 other Portuguese companies or companies operating in Portugal. BCSD Portugal joined the WBCSD's vast regional network from its date of establishment.

CIMPOR participates on a regular basis and with great enthusiasm in the many events organised by WBCSD and BCSD Portugal, in order to familiarise employees with the new challenges faced by the business world and society in general.

This is precisely what happened again in 2010, when CIMPOR participated for the fourth time in the WBCSD's programme "Future Leaders Team (FLT)", which was dedicated this year to the issues of "**Collaborative Innovation**" and the publication of "**Vision 2050 - The New Agenda for Business**" of the WBCSD.



The **Vision 2050** project of WBCSD aims to answer a challenging question: How can the world accommodate a 30% increase in people and provide them with the capability to not only survive but to live well and within the limits of the planet. Part of the global answer that seems to be clear is that companies must be an important catalyst for the implementation of these paths to success. The companies will have to work together to achieve mutually beneficial results that will steer the future agenda of companies for sustainability.

This will require new ways of doing business, with approaches that heavily rely on collaboration with non-traditional commercial partners as well as traditional commercial partners.

These partnerships should promote innovation in industry, while also allowing companies to maintain their competitive advantage in the market. This is a new business model, one that is ready to be put into operation".

#### CEMENT SUSTAINABILITY INITIATIVE (CSI)

It is not very common to see alliances that bring together most of the companies of a specific sector to tackle a theme. Perhaps, only a subject as demanding as sustainable development in terms of in-depth knowledge sharing, learning and interactions could produce such mobilisation.

The Cement Sustainability Initiative (CSI), in which CIMPOR has been present since its founding, unites an important group of members of this industry, and it is certainly one of the largest sustainability programmes ever voluntarily undertaken by an industry.

The Cement Sustainability Initiative (CSI) has been mobilising an important set of stakeholders of this industry and gaining a growing reputation, and it is certainly one of the largest sustainability programs ever voluntarily undertaken by an industry. This initiative, besides aiming to create a vision and values of sustainability among companies and their organisational structures, also seeks to establish regular dialogue with the sector's main stakeholders.



This pioneering project, which was established in 1999 under the aegis WBCSD, was initially the scheme of the world's ten largest cement manufacturers, including CIMPOR from its inception, to apply that concept to the cement sector.

Even though all these companies, which currently number twenty-three, have been developing projects in this field over the years, for the first time CSI represents an opportunity to join forces to together tackle the challenges facing the entire sector and society in general, providing a unique opportunity to mobilise society's different actors at a global level.

Some topics, such as the Climate Change and Safety remain one of the major concerns of the cement sector.

Other issues, such as the Biodiversity Management, are becoming more important to society and industry with every day that goes past, forcing us to learn more about the subject.

The next ten years will see more organised attempts to measure and account the total cost of environmental and social impacts.

The growth of demand and the business in emerging countries with basic infrastructure needs still to be met, will mean that companies' access to natural resources and their project funding capacity will be increasingly tied to performance in terms of sustainable development.

The CSI has recorded remarkable progress on many aspects of its agenda. Some of these have been part of the initial action plan "Our Agenda for Action", launched in 2002. Climate protection and the management of CO<sub>2</sub> emissions, the responsible use of raw materials and fuels, the safety and health of employees, monitoring and reporting emissions, impacts on land use and local communities, and reporting and communication are some of the areas in which very positive results have been achieved. Despite the progress already made, the CSI will continue to proactively influence all these areas.

Following a reflection on the future and in light of the trends observed, new issues are gaining significance in the cement sector and the CSI member companies will once again seek to find answers in all those areas. Areas such as water management and the supply chain will require that the scope of the work be set before a specific agenda is defined. Other aspects, such as the use of concrete in sustainable construction and biodiversity potential and land use, will broaden the scope of activities of the CSI and identify opportunities for the sector.

CIMPOR is represented in the various working groups that are being created in the CSI to develop guidelines on new sustainability issues and subsequently to galvanise the implementation of the commitments made.



CIMPOR will have representatives in the various working groups that are being created to develop guidelines on these new issues and subsequently to foster the implementation of commitments undertaken.

Information on all these new trends and projects underway is available and developed from the CSI website: <http://www.wbcdcement.org>.

### CONSOLIDATION PERIMETER OF THE CIMPOR GROUP'S SUSTAINABILITY INDICATORS

Between 1990 and 2010, the CIMPOR Group grew from a company with six Operating Units (OUs) in Portugal, two of which have since ceased to belong to the company, to an international group with 40 operating units (26 cement plants and 14 grinding plants) in its Cement Business and also operations in a further 12 Business Areas: Spain, Morocco, Tunisia, Egypt, Turkey, South Africa, Mozambique, Cape Verde, Brazil, China, India and Peru. In Cape Verde and Peru the business is conducted via sales depots as no production units yet exist in those countries.

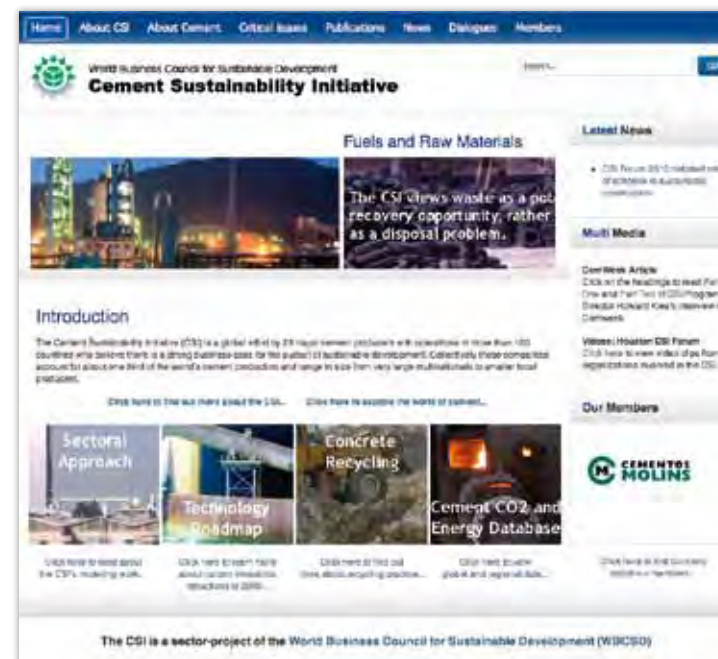
The term "Operating Unit" (OU) used in this report invariably refers to complete cement plants or grinding plants. Whenever units other than these types are referred to the term organisational unity (OrU) is used (e.g. central services, sales depot, trading services, among others).

Only the operating units of the subsidiaries in which, at the end of 2010, the CIMPOR Group held management control and in which traditional reporting systems are in place were considered in the consolidation of data for this Sustainability Report.

In 2010, two new OUs in China, namely the Shanting (Zaozhuang) plant and the Huai'an grinding plant were included in the consolidation perimeter, and the Sines OU in Portugal and Huelva OU in Spain were removed due to closure.

All indicators published in this report therefore relate to this new perimeter and this current set of 40 OUs.

The only exception is the OHS indicators which, in 2010, besides the cement plants and grinding plants mentioned above, also include shared corporate centre businesses and services related to the Cement Business in the



Portugal Business Area (CIMPOR-Cimentos de Portugal, SGPS, S.A.; CIMPOR PORTUGAL, SGPS, S.A.; CIMPOR TEC, S.A.; CIMPOR Serviços, S.A.; CECISA Comércio Internacional, CTA-Cement Trading Activities and the Network of Commercial Sales Depots/Cement Terminals), as well as shared central services related to the Cement Business, of some of the subsidiaries in countries in which CIMPOR operates in which such services also exist (the Spain, Brazil, South Africa and Turkey Business Areas).

### SUMMARY OF THE MAIN SUSTAINABILITY GOALS OF THE CIMPOR GROUP

In 2010, CIMPOR continued to pursue previously set goals relating to these topics, internally implementing actions relating to those goals, which will be detailed in this Report.

The following table summarises the main developments in key performance indicators used to monitor progress and the established targets:

KPIs	2009	2010		EVOLUTION AND GOALS
<b>CLIMATE CHANGE</b>				
% of OUs using the WBCSD/WRI CO <sub>2</sub> Protocol	100%	100%	😊	100%
Total gross CO <sub>2</sub> emissions in million tons per year	17.7	18.9	-	Not defined
Overall gross specific CO <sub>2</sub> emissions in Kg per ton of clinker	870	876	☹	Not defined
Overall gross specific CO <sub>2</sub> emissions in Kg per ton of cement product	677	681	➡	15% reduction of net emissions by 2015 (reference year - 1990) (reference: ~610 kg CO <sub>2</sub> per ton of cement product, considered the original baseline)
<b>ALTERNATIVE FUELS AND RAW MATERIALS</b>				
Overall % use of alternative raw materials (clinker and cement)	9.3%	8.7%	➡	10% by 2015;
% of clinker used in manufacture of cement	76.7%	76.7%	☹	Not defined
Overall energy efficiency of clinker kilns (MJ/t clinker)	3,565	3,635	☹	Not defined
Overall % use of alternative fuels (fossil and biomass alternative fuels)	4.6%	4.6%	➡	10% for 8 Business Areas by 2015;
Overall % use of biomass	1.5%	1.3%	➡	2.5% for 8 Business Areas by 2015;
<b>OCCUPATIONAL HEALTH AND SAFETY</b>				
• Number of fatal accidents involving direct employees	1	0	😊	0
• Mortality rate per 10,000 direct employees	1.69	0	😊	0
• Number of fatal accidents involving indirect employees (on contract and sub-contracts)	6	4	☹	0
• Number of fatal accidents involving third parties	0	2	☹	0
• Number of accidents of direct employees with loss of working days	51	59	-	Not defined

KPIs	2009	2010	EVOLUTION AND GOALS
Frequency rate of accidents of direct employees with loss of working days per 1 million hours worked	4.10	4.70	☹️ 2010: < 3.9; 2011: < 3.5; 2012: < 3.10; 2013: < 2.6
Number of working days lost involving direct employees	2,975	3,638	– Not defined
Severity rate per 1 million hours worked for direct employees	239.4	289.8	☹️ 2010: < 192; 2011: < 153; 2012: < 123; 2013: < 98
Number of accidents of indirect employees with loss of working days	122	78	– Not defined
<b>EMISSIONS</b>			
Specific particle emissions (t)	161.6	144.6	☹️ 125 g per ton of clinker by 2010; ➡️ 100 g per ton of clinker by 2015;
Total particle emissions (t)	3,242.0	3,010	– Not defined
Specific NO <sub>x</sub> emissions (g/t clinker)	1,656.9	1,523.0	😊 1,750 g per ton of clinker by 2010; ➡️ 1,700 g per ton of clinker by 2015;
Total NO <sub>x</sub> emissions (t)	31,593.0	30,315	– Not defined
Specific SO <sub>x</sub> emissions (g/t clinker)	193.5	184.4	😊 300 g per ton of clinker by 2010; ➡️ 280 g per ton of clinker by 2015;
Total SO <sub>x</sub> emissions (t)	3,881.8	3,792	– Not defined
% clinker produced in kilns equipped with an occasional or continuous monitoring system for principal pollutants and micro-pollutants	95%	95.6%	➡️ 100% two years after acquisition or newly built; 100% by 2011
% clinker produced in kilns equipped with a continuous monitoring system for principal pollutants	95%	95.6%	➡️ 100% two years after last acquisition or new building; 100% by 2011
<b>LOCAL IMPACTS</b>			
Number of quarries located in environmentally sensitive areas	11 (16%)	16 (23%)	– Not defined
Percentage of sites (quarries) of high biodiversity value where Biodiversity Management Plans (BMP) are implemented	4 (36%)	6 (37.5%)	➡️ 7 (65%) with BMPs by 2015
% OUs with plan for the regular engagement of local communities and other stakeholders	85%	90%	☹️ 100% by 2010; ➡️
Percentage of active operating units with approved environmental rehabilitation plans for quarries	78.3%	77.1%	☹️ 90% by 2015; ➡️

**KEY:**



New Goal



Undergoing development



Goal Achieved



Goal Partially Achieved



Goal Not Achieved



No Associated Commitment



Not Applicable/Not Available

ECONOMIC  
PERFORMANCE  
2010

INFLOW FROM  
STAKEHOLDERS

CLIENTS

**2609**

Million euros



OTHERS

**16**

Million euros



OUTFLOW TO  
STAKEHOLDERS

**2293**

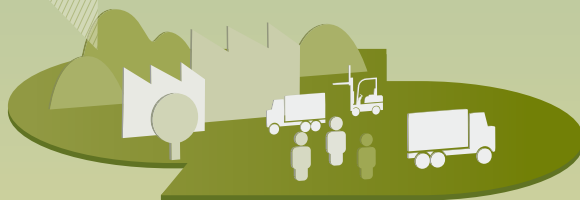
Million euros



SUPPLIERS

**1773**

Million euros



SHAREHOLDERS

DIVIDENDS

**129**

Million euros



EMPLOYEES

SALARIES

**253**

Million euros



BALANCE  
TO CIMPOR

**316**

Million euros

STATE  
TAXES

**71**

Million euros

BANKS  
INTERESTS

**51**

Million euros

INVESTMENTS

**186**

Million euros

NET  
REFINANCING

**-130**

Million euros

FINANCIAL

**27**

Million euros

INDUSTRIAL

**159**

Million euros

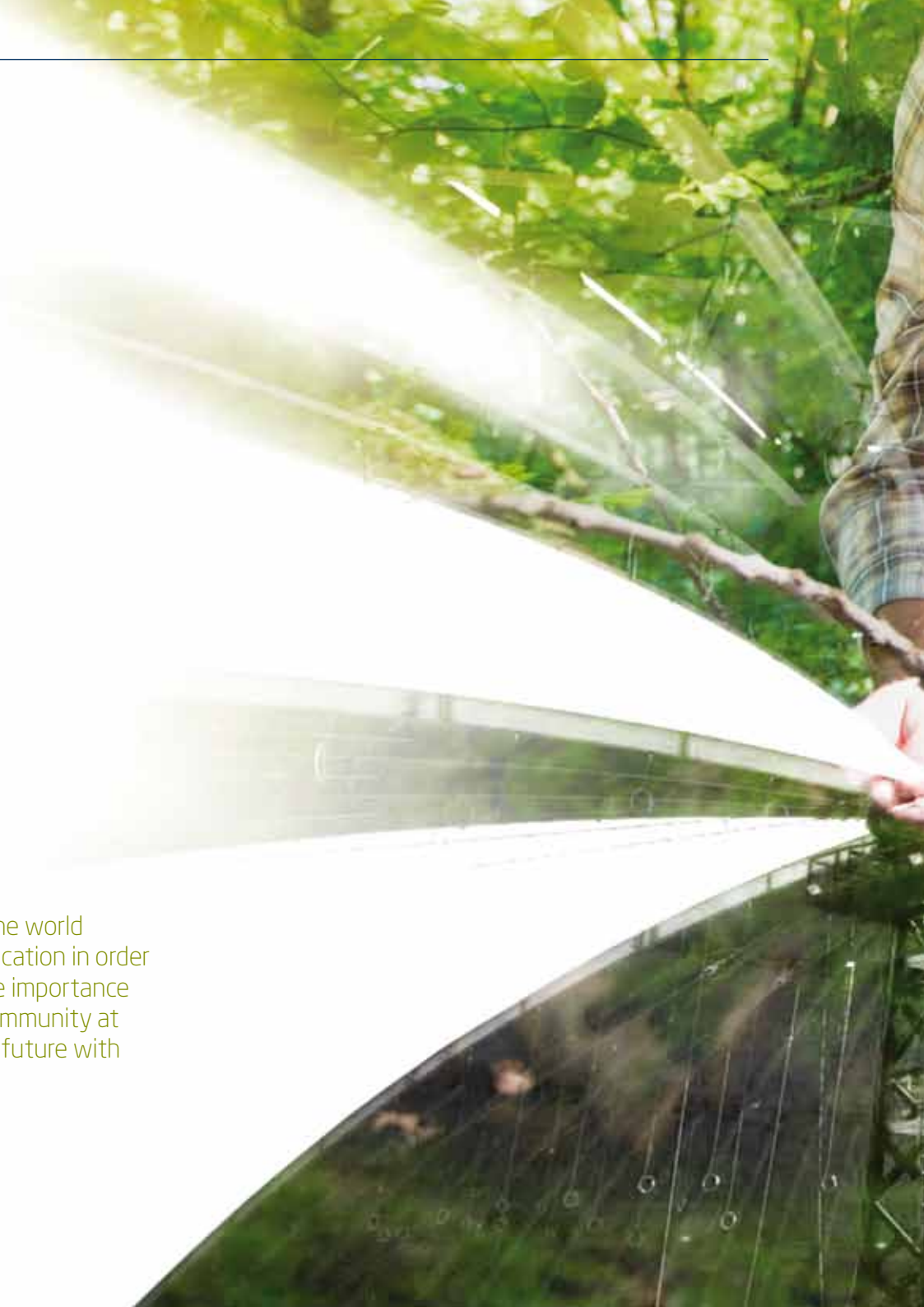




## **SPEAK, LISTEN AND ENGAGE TO GROW IN COMMUNITY**

Effective engagement with stakeholders is the best way to understand the world around us. We are committed to a policy of clear and transparent communication in order to comprehend their expectations and needs. At CIMPOR we believe in the importance of dialogue with shareholders, customers, suppliers, employees and the community at large, creating strong and lasting relationships that allow us to look to the future with hope and the desire to do more and do it better.

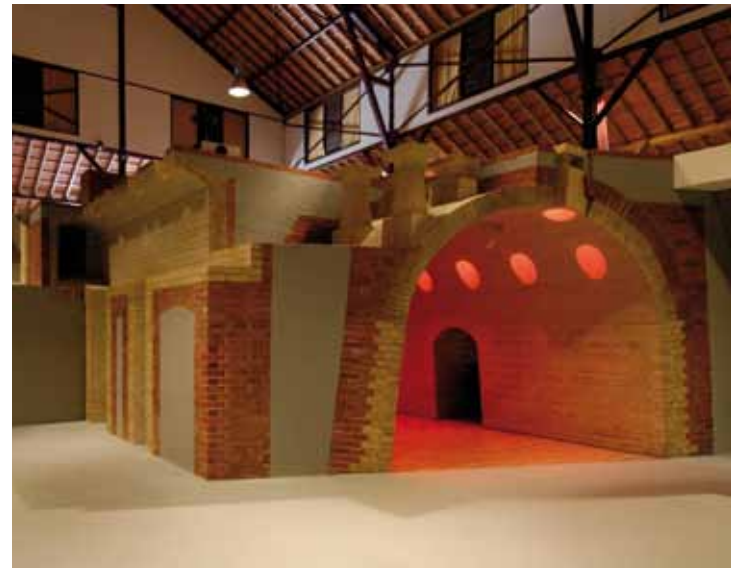
**CIMPOR. Our soundness is in your life.**







SOCIAL  
RESPONSIBILITY





## SOCIAL RESPONSIBILITY

CIMPOR develops its industrial projects in a long-term perspective with the commitment to create, develop and maintain constructive and lasting relationships of proximity with all stakeholders.

### POLICY ON COMMUNICATION AND RESOURCE DEVELOPMENT

The CIMPOR Group's communication policy, based on the principles of integrity and transparency, guarantees the development of relations with its stakeholders and the general public.

The different Business Areas may possess, due to the specific nature of the respective locations, their own communication bodies operating under the supervision of the holding company's Communication and External Relations Department.

The CIMPOR Group encourages continuous technological update, ensuring that it is equipped with the means required to guarantee effective communication with in-house and external audiences in all the areas where it operates.

A strong qualitative progression was registered in 2010 in relation to the means used in the field of internal communication with the implementation of CIMPORNews, the new information medium published on the CIMPORnet network, originally in Portuguese and English versions. The fact that transcription at the local level to any local language keeping the entire structure of corporate graphics made it an appropriate means of overcoming the barriers to communication found to exist to then. A new publication emerged from this strategy – CIMPORWorld, the external communication magazine of the Group, which more adequately meets this requirement in terms of content.

### STAKEHOLDERS' ENGAGEMENT

Many of our operating units are located adjacent to communities in which they are the main industrial reference and often the main employer. In other cases, we operate besides large urban and industrial clusters.

In both cases, CIMPOR develops its industrial projects in a long-term perspective with the commitment to create, develop and maintain constructive and lasting relationships of proximity with all stakeholders through ongoing investment in operating units, in people and the communities in which it operates.

In this sense, the entire management of the company is committed to working in close collaboration and harmony with neighbours, local authorities

and other stakeholders for the benefit of common interests and to minimise costs and losses of reputation and image.

This objective can only be achieved through open, honest and fluid dialogue with all those that allows us to develop the sensitivity needed to understand the local situation and social circumstances of the surrounding areas.



## ENGAGEMENT INSTRUMENTS, PROCESSES AND PARTNERSHIPS

Effective engagement with stakeholders is the best way to understand the world around us as well as the legitimate expectations of stakeholders in regard to us. It provides the basis for mutual understanding and is an important source of ideas to us. The establishment of these ties forms part of the daily concerns of all CIMPOR managers.

The process of stakeholder engagement demands a medium to long-term approach, which requires enough time being made available, on-going learning, specific skills and a solid and permanent commitment on our part in relation to the guarantee of the full transparency of those relations.

The success and future viability of our business are directly linked to our ability to operate in harmony and in a sustainable manner with our internal and external surroundings.

CIMPOR, concerned with meeting the expectations of the main stakeholders, has been developing and participating in a number of programmes intended to maintain meaningful and regular dialogue with key stakeholders, either on its direct initiative or indirectly through the various projects that CIMPOR is involved in, such as the Cement Sustainability Initiative (CSI). The aim is to create lasting and sustainable partnerships.

It is a process that has evolved quite favorably in various business areas, albeit at different speeds. Despite the fact that the issues associated with sustainability are global, local and regional priorities and perspectives vary widely and should be taken into account. Hence, depending on the type or importance of the issues to be dealt with and the location of the operating units, greater or lesser priority is given to our relations with each of the different groups of stakeholders, or greater or lesser responsibility is delegated in the local management teams to lead the dialogue process. The process of dialogue with stakeholders in CIMPOR is integrated with the various activities, functions and regions of the company, thereby seeking to ensure that the challenges we face are discussed at the most appropriate level.

Several examples of the type of engagement and partnerships that CIMPOR intends to promote can be found in more detail throughout this report.



We develop strategies and solutions tailored to each location and the instruments, themes, duration and intensity of the dialogue process are aligned with the specific interests of each stakeholder group.

The engagement encompasses, in some cases, the provision of the necessary information to the authorities and surrounding communities, education and training to suppliers and customers in order to ensure that a certain product or service is used in an effective and safe manner, and the public open-door policy of our operating units.

In other situations these partnerships take advantage of the technical and management capabilities of CIMPOR companies by involving them in social projects for vocational capacity-building. Such projects aim to foster social and economic development and to develop entrepreneurship skills among the population of the surrounding communities.



Our engagement can further include indirect aid, through philanthropy, to entities that are publicly recognised for their service to society. This indirect aid consists of donations in cash or in kind, services, study grants, prizes or investment.

We intend to learn from the individual experiences of the subsidiaries of CIMPOR and to highlight the importance of the feedback usually obtained from the various Business Areas/OU's of CIMPOR, in terms of cooperation with others. Successful practices in a particular Business Area (BA) are examples of good practices to be used in other BAs, with the appropriate adaptation to local realities. Similarly, cases that have not achieved the expected results in terms of engagement are studied so that they can be applied with a different orientation in this or at another location.

There follow some examples of the forms of engagement that we have maintained and the relations' instruments most used in recent years, without prejudice to more detailed development in some cases:


//////  
The partnerships include engagement in social projects of vocational training to develop the socio-economic and entrepreneurial skills of the population of the surrounding communities.



STAKEHOLDERS	MAIN PROCESSES OF ENGAGEMENT AND RELATIONS INSTRUMENTS USED IN 2010
Shareholders	Reporting quarterly and annual profits, and roadshows; highlights; Investor Relations Office; Strategic Plan; Investor Conferences; CIMPOR website <a href="http://www.cimpor.pt">www.cimpor.pt</a> ; reporting on the theme of Sustainable Development.
Customers	Commercial relations; technical/sales assistance; development of specific products for specific applications; Complaints procedures; Customer satisfaction surveys; specific programmes for "Mais" Customers; participation in activity-related trade fairs; producing information brochures on the application of each product.
Employees	Annual meetings of the Executive Committee with employees; CIMPORnet, the information portal of CIMPOR; "CIMPOR News" Magazine on the activity of CIMPOR in the world; BBT Magazine focusing on technical and management issues; interaction with the unions; Code of Ethics and warning procedures, and reporting of irregularities whistle-blowing; vocational training and skills development; International mobility; Health and well-being programmes; prevention programmes and Swine flu contingency plans; holiday camps intended for employees' children; sports clubs focused on different sports; activities organised by the company to foster team spirit; programmes to support home ownership and the purchase of computer equipment, among others.
Trade Unions	CIMPOR, demonstrating its commitment and responsibility towards its workers and their representatives, periodically concludes and renews collective labour agreements with trade unions. Currently, around 65% of CIMPOR's employees are covered by collective labour regulation instruments.
Local Communities	Various local community engagement projects; volunteering by company employees in the communities; public meetings and consultations on a wide range of issues; surveys of the impact of operating units on the communities; Open Days; Environmental and Social Impact Studies; complaints procedures and the reporting of irregularities (whistle-blowing); Study grants; promoting vocational training placements for the best students; varied economic, social, cultural and sports support (corporate patronage and sponsorship). Communication among local communities and local authorities of major projects to increase capacity or significantly change the manufacturing process.
Government and Local Authorities	Direct involvement or through relevant (national, regional and international) social-professional associations in a relationship of constructive cooperation; national and local initiatives; international partnerships; presentations and studies on the sector.
International Organisations	WBCSD through a sectoral project developed under the aegis of this organisation; Cement Sustainability Initiative (CSI); OECD through the SD Round Table; IEA (International Energy Agency) to prepare a technology roadmap for the cement sector; UNFCCC/CDM Executive Board to develop a new methodology for the cement sector; dialogue with the World Bank and IFC; Habitat for Humanity projects in local communities; World Monuments Fund for the preservation of classified historical heritage, among others.
NGO's	Involvement in issues specific to each region and in various types of partnership (e.g. social-economic development, environment, biodiversity, HIV/AIDS, malaria and other basic healthcare, health evaluations, education, housing, drinking water to surrounding populations, among others). Some recent examples are: Ezemvelo KZN Wildlife, Organic Farms Group, Ecosida, Kerkenes Eco-Center.
Suppliers and Service Providers	Commercial interactions; consultation and compliance processes; accreditation of companies and external entities for the provision of services and supplies; development initiatives promoted by the subsidiaries of CIMPOR; safety training courses aimed at contractors and vehicle drivers.
Universities	R&D project partnerships with universities of international standing; Support to R&D programmes on themes relevant to the company, especially in countries where CIMPOR operates; Employee training/postgraduates in specific areas; Educational support to university courses in the company's interest and providing professional training placements for the best students; Participation in seminars as part of university programmes.
Media	Fostering a close and transparent relationship with local, national and international media; permanent channels of institutional dialogue (e.g. DREC - External Relations and Communication Department), publication of articles in international speciality magazines; the CIMPOR website <a href="http://www.cimpor.pt">www.cimpor.pt</a> ; Press releases.



We believe at CIMPOR that regional economic development deserves particular attention in the subsidiaries, thus ensuring that we make our contribution to the economic development of regions.


 CIMPOR is primarily focused on the vocational training and professional development of people in areas that are important to the local business fabric.



For a better understanding of the situation and the expectations of our stakeholders, tools have been developed at the corporate level to standardise the work of identification and analysis by our operating units. These tools allow us to share, record, map and target concerns and needs, understand the potential levels of conflict and thus get a very precise idea on where to focus our efforts by setting priorities in a more accurate way and achieving an improvement in the intended interaction.



In relation to the mapping and segmentation of stakeholders at the local level, ascertaining their concerns and assessing the degree of engagement of our operating units (OU's) with each segment, we developed and implemented a corporate-wide set of guidelines/scorecards in 2008. These are intended to provide general guidance to our subsidiaries and allow each OU to carry out a self-assessment of its current status and, where necessary, take the corrective measures to improve the degree of interaction.

Furthermore, and from a corporate perspective in this case, one of the largest and most important platforms for CIMPOR as regards the interaction with stakeholders on a global scale is the WBCSD, of which we have been members since 1997. Countless dialogue sessions with stakeholders have been held under the WBCSD/CSI and the joint projects with the other members that have been developed since 2000. These sessions are intended to identify the main local, national and worldwide concerns regarding the sustainability of the cement industry. A general website ([www.wbcscement.org](http://www.wbcscement.org)) was developed for that purpose, acting as a permanent, up-to-date live source of reference of the CSI, its main projects, the question of sustainability in general and a forum for permanent contact with an extended community of local and global stakeholders in the industry, through which all possible interested parties can come into contact with CIMPOR and our activities in this field.



CIMPOR fosters an entrepreneurial culture among the surrounding communities, encouraging them to create and develop their own sources of income, by providing training and support for initiatives with a social impact.



### REGIONAL ECONOMIC DEVELOPMENT

We at CIMPOR believe that issues related to regional economic development should be given particular attention in the respective subsidiaries, undertaking our contribution to the economic development of the regions where we perform a greater or lesser role depending on the reality of the specific economies. This is a participatory process that encourages partnerships between local public and private players harnessing capabilities, resources and other synergies, and with the ultimate goal of creating sources of income, stimulating local economic activity and improving the living conditions of people.

The activities of CIMPOR are mostly steered to the capacity building and professional development of people in areas that are important to the local business fabric, supporting schools and study and learning incentives, creating new jobs, creating micro-businesses that are able to be self-supporting and, on a more general level, fostering an entrepreneurial culture among the surrounding communities that stimulates them to create and develop their own sources of income.

We seek to ensure that this is done through the training and financial support of initiatives that are preferably directly linked with our business activity, though this is not a mandatory requirement.



For some years now various CIMPOR OU's have been implementing highly successful development and capacity building programmes in the widest range of fields in the communities in which they operate. They are described in this report, and have been illustrated in previous reports.

Moreover, several young CIMPOR managers have participated in specific WBCSD programmes intended to identify ways of participating in this process, learning more on the subject and contributing to that development.

### RELATIONS WITH OTHER ORGANISATIONS

The CIMPOR Group embraces the role of social partner with full responsibilities, and therefore upholds the approach of associating itself to organisations that foster improved performance of that role.

CIMPOR, on the corporate level or through its companies of the Business Areas in which it operates, is an associate member of regional, national and international institutions working in the professional and socio-professional, technology development and research, and social responsibility fields. Those entities are listed on the Group's site.

[READ HERE THE CASE STUDIES \(PAGES 110 TO 128\)](#)



## MEASURING PROGRESS

### IMPACT ON LOCAL COMMUNITIES

#### LOCAL IMPACTS

1. Percentage of operating units with regular local community engagement plans currently in effect: **90%** (36/40).

#### GOALS AND NEXT STEPS

##### Stakeholders' Engagement

CIMPOR has recorded important progress in this field, though there are still some inconsistencies regarding the level of engagement of each OU with stakeholders.

In 2010, 90% of our OUs had regular engagement programmes with local communities and other stakeholders, measured by an internal self-assessment system that examines several areas of action in that field. In spite of the progress made, some effort is still necessary to expand the coverage of those programmes to all our OUs, a goal that was scheduled for this current year and that was not attained yet.

##### The Company's Impact on Society

Other tools besides the above-referred internal self-evaluation system are used in a more sporadic manner to measure the economic, environmental and social impact of our activities, which allows us to monitor the evolution and maintain regular dialogue with citizens, industrial and service companies, contractors, suppliers, customers, fire services, police, local commerce, schools, universities, municipal and parish councils, sports clubs and other public and private institutions. That dialogue steers the implementation of the necessary corrective measures.

This type of tool, "The Company's Impact on Society", which is composed of questionnaires, interviews and surveys, give us an image of the impact of our actions on surrounding communities and a measure of the degree of success achieved, while also fostering better management of the existing programmes.





## VALUE PEOPLE, INVESTING IN THEIR TALENT

CIMPOR is made up of thousands of employees working in the 12 countries on four continents where the Group operates. This is the strength that allows us to go further, one that is composed of an array of cultures and talents, which we seek to attract and retain, investing in their training and personal development. We promote the development of skills, mobility and engagement with communities because our challenge requires capable and motivated teams.

CIMPOR. Our soundness is in your life.





OUR  
EMPLOYEES





## OUR EMPLOYEES

We are concerned, in a climate of globalisation and diversity, with promoting appropriate and responsible social policy at all levels of the company, in harmony with the principles of honesty and integrity, respect for the freedom of association and promoting frank and open communication.

One of the priorities of CIMPOR is to contribute through a constructive approach to the simultaneous satisfaction of the company's needs and the needs of employees, dealing with a broad spectrum of cultures and values to ensure its survival as a business and the human development of its employees.

We are concerned, in this environment of globalisation and diversity, with promoting an appropriate and responsible social policy at all levels of the company, in harmony with the principles of honesty and integrity, respect for the right of association and promoting frank and open communication.

### HUMAN RESOURCES POLICY AND EMPLOYEE DEVELOPMENT

The major aspiration of the CIMPOR Human Resources Policy for the period 2010-2013 is strengthening the organisation and its operational execution capability, which will only be achieved through the sustained professional development of its employees throughout the Group.

Accordingly, an effort to solidify the corporate culture of CIMPOR has already been noted in 2010, through the development of capabilities, mobility and equal opportunities, respecting and promoting at the same time the cultural diversity of various countries where Business Units operate. This change has been embodied in the strengthening of corporate functions and seeking the commitment and engagement of each employee to pursue the overall objectives.

To enhance the sustainable growth of the Company through the optimisation of individual contributions, CIMPOR continues to invest:

- In **talent management**, including attracting, retaining and developing employees with high potential;
- In the **development of technical capacities** and strengthening the leadership capacity of the Group;
- In motivation through individual **engagement** and **communication**;
- In the promotion of **diversity** and international **mobility**.

The corporate Human Resources policy which supports the above assumptions is perfectly aligned with the principles of the main international reference standards on the subject. This applies to the conventions of the International Labour Organisation (ILO), a multilateral agency connected to the United Nations (UN), which specializes in labour issues, the requirements

Attract, retain and develop high potential individuals is one of the critical factors of success for the sustainable development of CIMPOR.

of the World Bank/International Finance Corporation (IFC) presented in section 6 "Human Resources Policy" of the respective Performance Standard 2 "Labour and Working Conditions" and other varied reference standards.

#### TALENT MANAGEMENT

*"Attract, retain and develop high-potential individuals is one of the critical factors of success for the sustainable development of CIMPOR." Managing talent involves the continuous and timely preparation of the employees with the most suitable profiles who may in the future take up key roles and/or leadership roles in the Group.*

Several young professionals with varied academic and professional experiences were recruited during 2010 to strengthen and galvanise the corporate functions of CIMPOR to integrate new talent. Of the ten most recently recruited managers, six (with training in management, economics and marketing) were integrated into financial, management and communication areas at the corporate level (Business Development, Investors Relations, Planning & Control, PR & Communication), the remaining four have enhanced CIMPORTEC's technical staff, a company that is part of the Business Support for the Group.



As in previous years, CIMPOR again joined forces with AICEP Portugal in another round of the International Internship Program "Inov Contacto 2010-2011". Under this partnership internships are currently underway in the Business Units in Turkey, Mozambique, Morocco and China.

This program has proven to be a valuable source of recruitment in recent years, in the sense that the selected candidates have a profile suited to the needs of CIMPOR.



In Turkey the "Face to face with the CEO" initiative was developed, which seeks to retain existing talent by increasing motivation and commitment levels. This HR initiative resulted in the first individual conversations with the CEO of Turkey, in 2010, where employees had the opportunity to share opinions, clarify doubts and obtain information (see related case study).

As regards wage policy, there is latent concern in CIMPOR to ensure internal equality and external competitiveness. Accordingly, salary surveys are regularly conducted by both the corporate HR Management and also the local HR teams, which aim to safeguard salary size so as to foster the retaining of talent.

The human resources policy of CIMPOR aligned with the overall business objectives has the continuous creation of value by employees as a strategic priority.



It should be noted also that the wage policy of CIMPOR fully respects the international labour standard on the matter, "Standard on Wages" of the International Labor Organisation (ILO).

In short, the attraction and retention of the best is crucial. However, we must also train our talent and develop their individual potential, preparing them for future challenges.

#### SKILLS DEVELOPMENT

The CIMPOR Human Resources Policy is compatible with the overall objectives of the business, and its strategic priority is the continuous creation of value by CIMPOR's employees." Based on this principle, the Company promotes and guarantees, in general, processes that ensure the development of its human capital, strengthening the know-how and the skills required for the sustainable growth of the Group's business activity.

The Right to Guidance and Vocational Training, a principle enshrined in international labour standards "Standards on Vocational Guidance and Training" of the International Labor Organisation (ILO), form the foundation of human resources practices and training policies in force in CIMPOR.

In Portugal, CIMPOR employees are encouraged to acquire educational qualifications, either through a specific system of skills acquisition, or the national education system.

This process is supported by legislation and also by internal regulations that define concepts and establish the guiding principles for the award of the status of Working Student.

The growth of the business in Brazil and the threat arising from increased demand for talent in this market demanded immediate action to answer internal needs.

The "Disseminators of Knowledge" project, which was conducted in 2010, brought together "expert" employees with expertise in various areas. These meetings have resulted in the development of training content in order to develop and disseminate knowledge throughout the organisation. This experience has also generated a capital gain for the "expert" employees since it also formed a foundation pillar for their own growth in the organisation (see related case study).

In China, after the start-up in early 2010 of the new plant at Zaozhuang, the Northern Business Unit (CIMPOR Northern BU) was certified by the provincial government of Shandong as a Centre for Postgraduation Studies. Since then more than 20 training and internship opportunities have been made available in the plants and shared services of this business unit. This measure by the regional government, in partnership with CIMPOR, contributes to the fight against unemployment by promoting the integration of young graduates in this region's labour market (see related case study).

There is an initiative with a similar purpose in Brazil, called "Project Fishing". That project encompassed another CIMPOR plant in this country in 2010 - the São Miguel dos Campos plant.

The member organisations of the "Fishing Network" make their facilities available for the personal and vocational training of teenagers in situations of social difficulties (see related case study).

Such projects not only promote the qualification of young people who could eventually join the local staff of CIMPOR, but they also play an important role of social responsibility, by developing and empowering young skilled and unskilled workers in the communities in which CIMPOR is inserted.



160,000 hours of training = 21 hours of training per employee.



CIMPOR, through the mentioned initiatives, shows strong commitment to promoting equal opportunities and fair treatment, which is enshrined as a principle in International Labour Standards on the Equality of Opportunity and Treatment, of the International Labour Organisation (ILO).

Another of the current priorities of CIMPOR is the renewal and development of the Group's Leadership. It has conducted specific actions in this regard. For example, in South Africa we developed the "Argil Management and Realignment Process" project that included the management officers, i.e. the managers at various levels of the structure, with the aim of promoting alignment, efficiency and effectiveness in terms of management. This process has created in this business unit a management team that is aligned and more efficient.

The continuous training of employees therefore represents a priority across the CIMPOR Group. More than 160,000 hours of training were provided in 2010, which is around 21 hours per employee on average. According to the data published in the CIMPOR Sustainability Reports of the past four years, the total number of training hours has increased. The increase compared to 2007 (130,000 hours of training) has been 23%.

#### ENGAGEMENT AND COMMUNICATION

The new organisational model of CIMPOR, approved in 2010, helped to consolidate and clarify the internal lines of communication in the Group.

The strengthening of corporate roles, having the primary purpose of defining and disseminating overall guidelines, allows the harmonization of existing

policies and encourages greater involvement and commitment from local teams to the strategic objectives of CIMPOR.

The trend to increasingly promote communication and the involvement of employees is another pillar of the sustainable growth of the Organisation.

This trend was found at various levels of the structure in 2010. It was present among the Top Management of CIMPOR, with the creation of the Management Committee and the holding of sporadic events/meetings for the discussion of strategic issues, and at the operational level, through initiatives such as "HR Days" in Turkey, which will be held during the 1st half of 2011. The HR Days initiative action will involve the local HR team visiting all plants in order to collect individual feedback from employees (see related case study).

CIMPOR has been making a notable effort to establish and maintain healthy collaboration with trade unions, their representatives and workers' committees.

We continued to negotiate and review the collective labour agreement in Egypt, in 2010, while also preparing the negotiation strategy for an agreement in Turkey, which will be held at the start of 2011.

In Portugal, besides the review of the collective labour agreement of Cimentaçor and negotiation of the collective rues of Sanchez, the temporary suspension of operations at the Sines grinding facility and the Huelva grinding facility in Spain are to be noted.

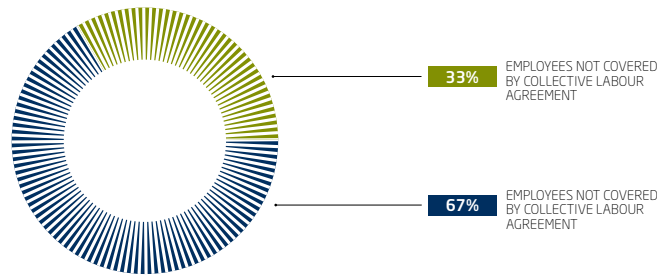
The process concerning both units included several individual explanatory sessions, and agreements were negotiated with each employee, providing the possibility of them being employed at other CIMPOR facilities, in Portugal and Spain, respectively. The Company has demonstrated added care in this case, by not only meeting its legal requirements but also by ensuring the best re-employment solution for both parties.

In relation to the freedom of association, organisation and collective bargaining, CIMPOR ensures compliance with the principles set forth in international labour standards, including the "Standards on Freedom of Association and Collective Bargaining" of the International Labour Organisation (ILO) as well as the requirements of the World Bank/International Finance Corporation (IFC) presented in sections 9 and 10, "Workers' Organizations" of the relevant Performance Standard 2 "Labour and Working Conditions".

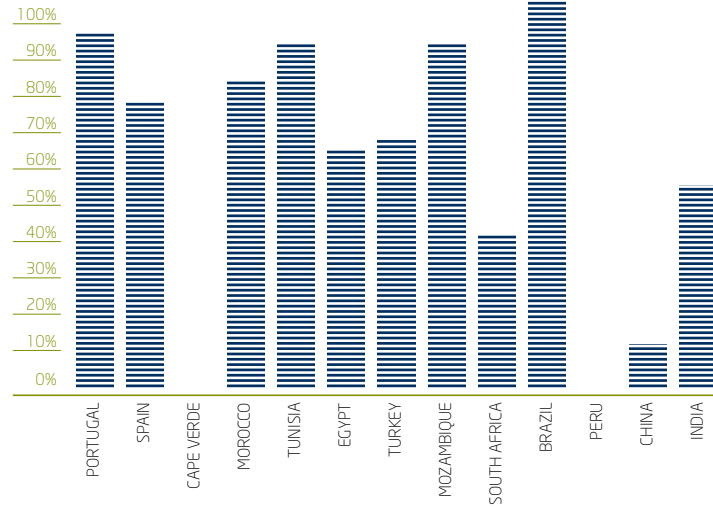


67% of employees of the Cement Business are covered by collective labour instruments.

PERCENTAGE OF EMPLOYEES COVERED BY COLLECTIVE LABOUR REGULATION INSTRUMENTS 31 DEC. 2010



Currently, more than 67% of CIMPOR's employees associated with the Cement Business are covered by collective labour regulation instruments.



Brazil, Portugal and Mozambique are the countries with the highest percentage of employees covered by this type of instrument.

The number of CIMPOR employees involved in various social and/or sports initiatives promoted in 2010 continues to be remarkable. Of particular note are the blood donation initiatives in China, where 66 employees donated blood for a colleague of the Zaozhuang plant who was hospitalized, and the sports competition and other initiatives involving employees and their families in India.

**DIVERSITY AND MOBILITY**

"Global mobility for a multinational organisation such as CIMPOR, as well as the diversity of cultures, skills and experiences, are a decisive asset in ensuring the sustainability of the business, while also providing an attractive challenge for the management of Corporate Human Resources."

Based on this premise, CIMPOR has been focusing on the export abroad some of its employees to firstly meet local needs through the sharing of technical knowledge and business experience, particularly in relation to key roles, and secondly to promote the development and enrichment of its employees by providing international experience within CIMPOR.

CIMPOR had approximately 68 employees at the end of 2010 working as expatriates or a situation of a short duration mission, predominantly of Portuguese (64%), Brazilian (13%) and Spanish (13%) origin. The vast majority, about 85% of these employees, have higher education qualifications



CIMPOR has about 68 employees working as expatriates. 64% of these are of Portuguese origin.

and are in director, management or technical roles. The average age of this group of employees is 42 years.

To better meet the challenge of managing expatriates, a software application was acquired in 2010 to support and optimise all related processes.

**CIMPOR PROFILE**

The CIMPOR workforce in December 2010 totalled 8,493 workers, covering the cement, concrete, aggregates, other and common services areas.

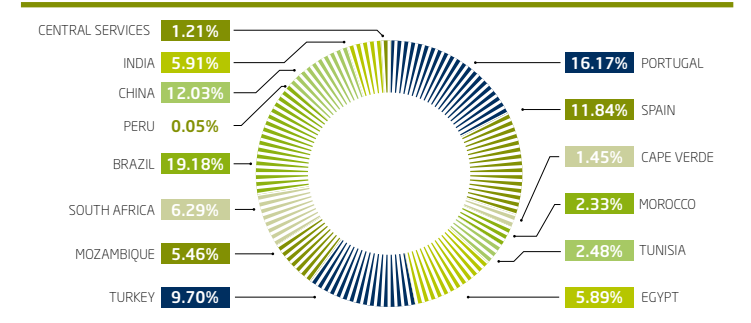
The CIMPOR workforce of the cement business was composed of 5774 workers, which is approximately 2% less (14 employees) than the figure at the end of the previous year.

Much of the decline of the overall workforce of the CIMPOR Group occurred in the Cement Business, primarily as a result of adjustments in harmony with the shrinkage of the Iberian market.

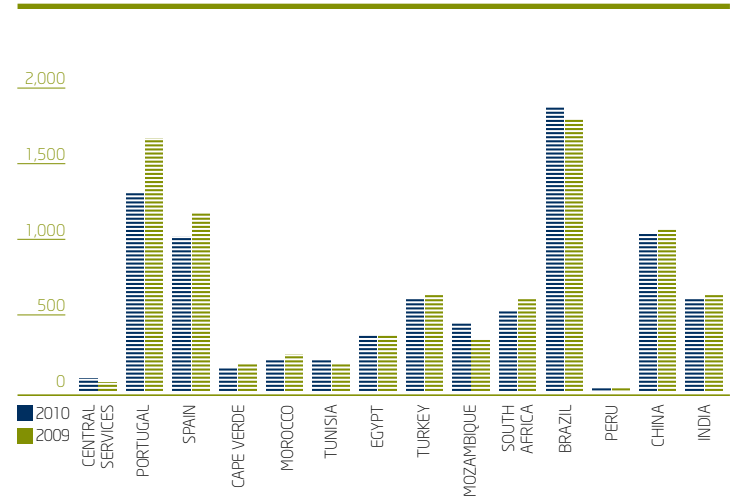


In countries where a decrease in the number of employees was recorded, this was essentially due to the optimising of the human resources in order to increase the sustainability of the respective business units.

**DISTRIBUTION OF EMPLOYEES BY GEOGRAPHICAL AREA** 31 DEC 2010  
All Business Activity Areas



**NUMBER OF EMPLOYEES** 31 DEC 2010  
All Business Activity Areas

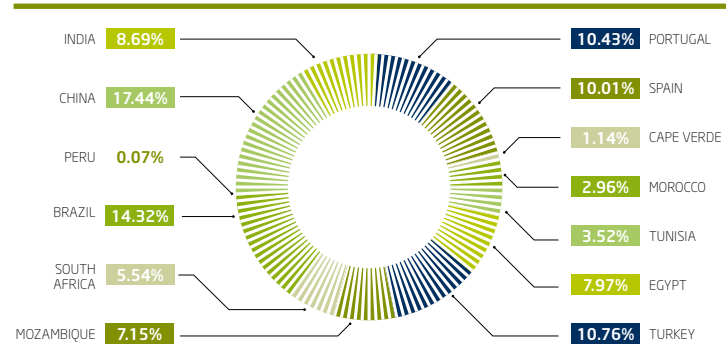


The decreases in Portugal, Spain and South Africa were driven by adjustments due to market declines. In India, the workforce was adjusted to align with that of CIMPOR plants of similar size.

The strong expansion of the cement business in Brazil is noteworthy, which already accounts for 14.3% of all CIMPOR employees. The China Business Area

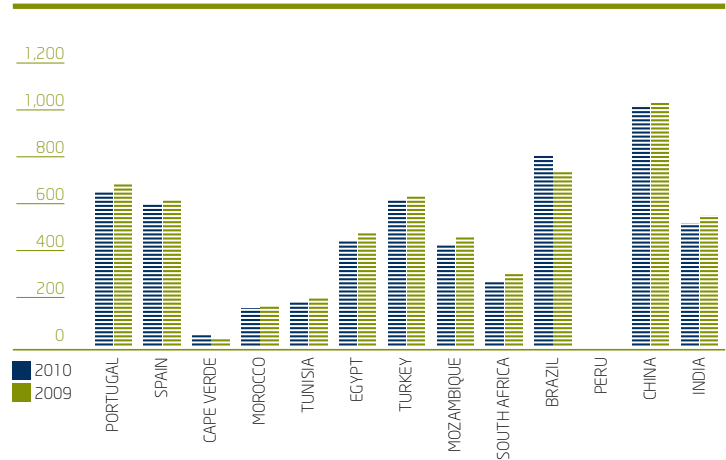
however, continues to account for the highest percentage of employees if we only consider the Cement Business (17.44%).

**DISTRIBUTION OF EMPLOYEES PER GEOGRAPHICAL AREA** 31 DEC 2010  
Cement Business



In the Cement Business only Brazil and Cape Verde recorded an increase in the number of employees, 11.8% and 8.2% respectively.

**NUMBER OF EMPLOYEES** 31 DEC 2010  
Cement Business



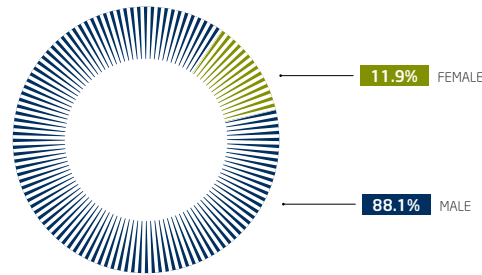
The workforce of CIMPOR is predominantly male (88%). The dominant age groups are between 30 and 34 years (15.7%) and between 45 and 49 years (16%). A significant group of employees (44%) has provided between 3 and 15 years of service. Moreover, 64% of employees have an average education at basic and secondary level.



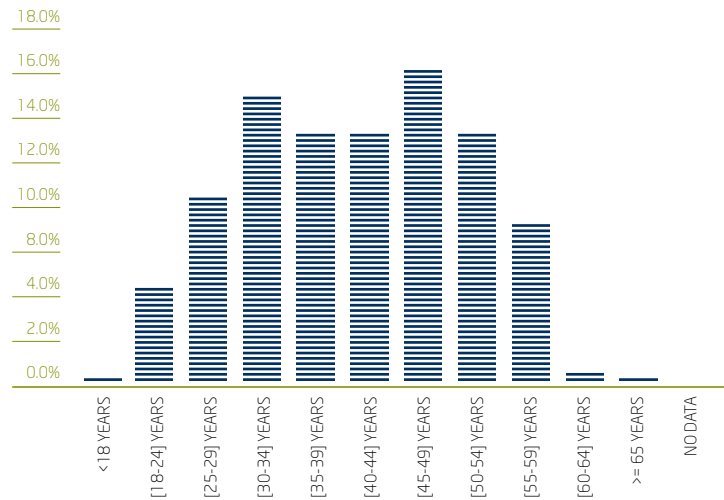
Considering all Activities (Cement, Concrete & Aggregates and Mortars), Brazil is currently the CIMPOR Business Area with the highest number of employees (about 1600).

82.2% of employees are aged between 24 and 54 years. About 20% hold a higher education degree, 8% hold a middle-level professional-vocational qualification, and 65% have completed basic or secondary education.

**EMPLOYEES BY GENDER** All Business Activity Areas

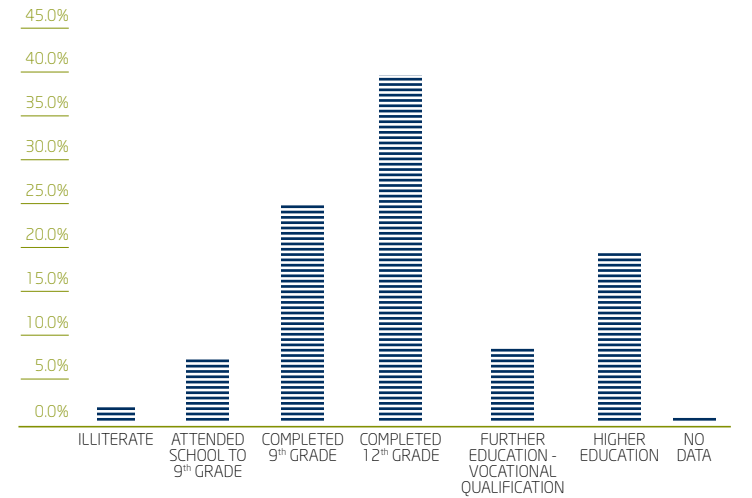


**EMPLOYEES BY AGE GROUP** All Business Activity Areas



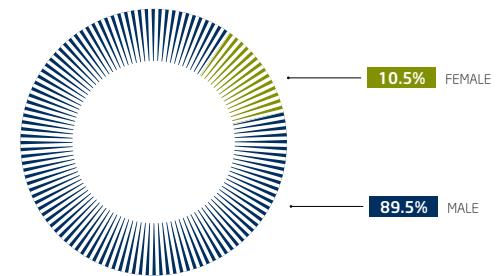
The percentage of male employees in the Cement Business is slightly higher than that for the total CIMPOR workforce. The distribution by age group of the Cement Business is shown to follow the overall trend for the CIMPOR workforce.

**EMPLOYEES BY LEVEL OF SCHOOLING** All Business Activity Areas



In this business activity, the concentration of employees with between 21 and 35 years of service is slightly higher than that for the total workforce of CIMPOR.

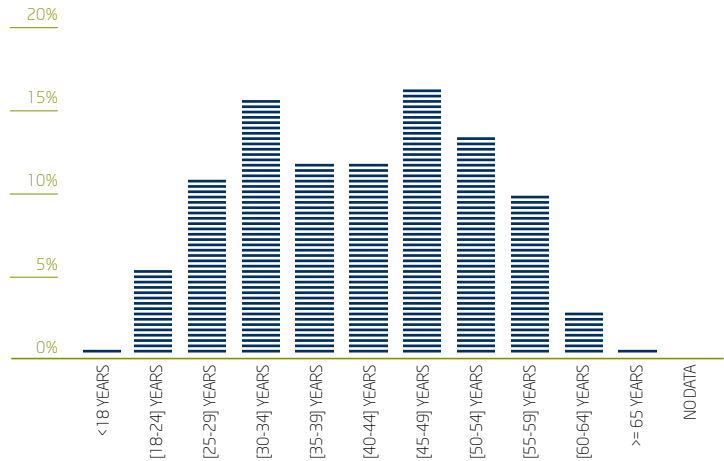
**EMPLOYEES BY GENDER** Cement Business



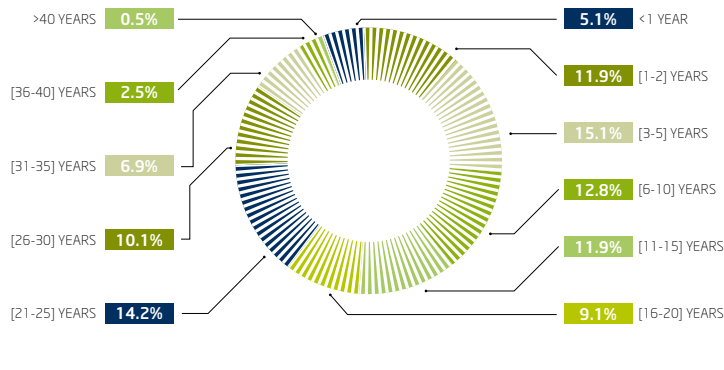
A comparison with the total CIMPOR workforce shows that the Cement Business has a larger percentage of employees holding Secondary Education and Middle-Level Professional/Vocational qualifications.

81% of employees are permanent staff, 17% are on fixed-term contracts and 1% are expatriates. 88% of employees are male and 12% are female.

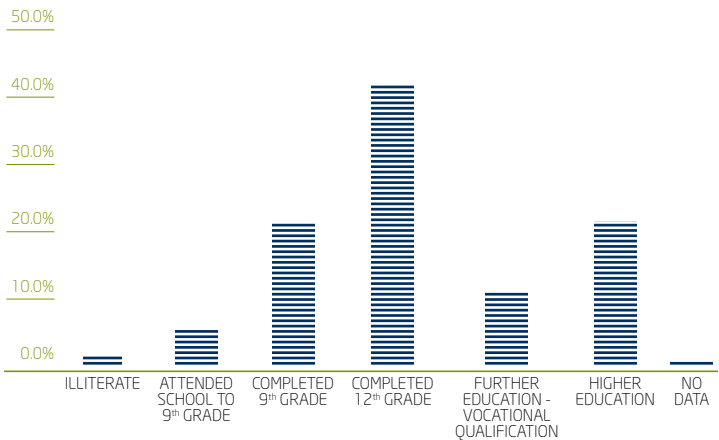
EMPLOYEES BY AGE GROUP Cement Business



EMPLOYEES BY YEARS OF SERVICE Cement Business



EMPLOYEES BY LEVEL OF SCHOOLING Cement Business



CIMPOR aims  
 to foster a  
 corporate human  
 resources culture  
 that promotes  
 talent and high  
 performance  
 among employees.

## MEASURING PROGRESS

### HUMAN RESOURCES

#### DEVELOPMENT OF THE HUMAN RESOURCES POLICY

The implementation of the corporate careers management policy continued as planned in 2010, based on the methodology of description and evaluation of roles and management of skills. Following the implementation in 2009 of the SAP | Human Resources PY in Turkey and South Africa, the intention is to now extend this tool to other Business Areas in coming years and to increase the training and qualification of employees.

#### GOALS AND NEXT STEPS

CIMPOR aims to foster a corporate human resources culture that promotes talent and raised employee performance. It also aims to foster talent management and international mobility.

**2011:** The continuation of the implementation of the corporate careers management policy based on the methodology of description and evaluation of roles and management of skills; The extension of the Organisational and Social Climate audit to other BAs; All Group companies shall have their own training and qualification programmes for their employees, based on the corporate concept.

**2012:** Implementation of the talent management model for CIMPOR.



## EMPLOYEE HEALTH AND SAFETY

CIMPOR has been creating an internal Occupational Health & Safety (OHS) structure since 2004, with "Zero Accidents" as the long term goal. The project has been developed so as to also incorporate occupational health and safety aspects of internal and external workers in a systematic way into management and decision-making systems. This strategy increases awareness of these issues and makes them a fundamental value to be preserved in all CIMPOR subsidiaries.

### GOALS AND ACTION PLANS FOR THE THREE-YEAR PERIOD 2011-2013

The activities carried out in 2010 in the Occupational Health and Safety field followed the established planning and allowed the goals set by CIMPOR to be reached. The attitude and commitment of all direct and indirect employees and third parties contributed to this success, through the implementation of important individual and group initiatives in this area, which were reflected in the improvement of some of the OHS performance indicators and, above all, in the obtaining of healthier and safer working conditions for everyone.



All Organisational Units (OUs) of CIMPOR presented their Goals and Action Plans for the 2011-2013 period during 2010, with the aim of continuous improvement. The results obtained in 2009 were analysed and found to be quite satisfactory.

### OHS NETWORK

The Third Meeting of Occupational Health and Safety Co-ordinators of CIMPOR was held in Córdoba, Spain, at the start of March 2010. This meeting aims to encourage the sharing of experiences and know-how in the OHS field. It was attended by 14 members of staff representing 8 of the 13 countries where CIMPOR operates, namely Portugal, Spain, Brazil, Morocco, Tunisia, Turkey, South Africa and Mozambique. This type of annual meeting is intended to discuss various issues related to the organisation and communication flow in the OHS Network (information on completing accident analysis forms and other matters, clarifying definitions, the need to update data, complying with deadlines, reports of occupational accidents and good practices, etc.). Special focus was given at the meeting to the evolution of the IT project to collect and process OHS data.

The OHS co-ordinators present the performance results of their respective areas and discuss the initiatives and good practices that had the greatest impact on those results. A joint discussion on the performance indicators of CIMPOR and occupational accidents at the OUs was also held.

In 2010, several guest speakers presented topics such as: Integration of Occupational Health to Raise Workplace Safety; The need for a coordination model; Risk assessment strategies in terms of hygiene, associated with silica particles; Risk management in explosive atmospheres; Prevention of occupational risks - consultation between employers and unions, "The Andalusian sector model"; Total Health and Safety Management of an entire cement plant - the Experience in the plants of Andalusia; and Outsourcing of Health and Safety Management in services companies.

Two visits were made, one to the Córdoba Cement Plant (where there was a demonstration of a new high temperature resistant fabric, made by a supplier) and the other to the laboratories of Fremap (with an explanation of the operation and accreditation, and visit to the Chemical Laboratory with an explanation of the various analysis techniques used, and visits to the Preventive Equipment Unit, the Calibration Laboratory and the Microbiology and Water Unit).

The meeting ended with a visit to SICUR - International Safety, Surveillance and Prevention Trade Fair. All participants expressed the importance of participating in such events.



### CIMPORnet

In 2010, communication was heavily driven by the restructuring of the Occupational Health and Safety – CIMPOR portal, now available in seven languages: English, Portuguese, Spanish, French, Chinese, Turkish and Arabic, as well as various initiatives aimed at reinforcing the culture of safety.

### COMMUNICATION/POSTERS

Two posters were distributed during 2010. The first: “Health and Safety - We are all the Key”, appealed to the involvement of all employees in the adoption of good practices and safe behaviour, while the second poster: “Today - Zero Accidents - Healthy and Safe Working Environment” intended to highlight the main goal of CIMPOR.

### WORLD SAFETY DAY

The “Today - Zero Accidents - Healthy and Safe Working Environment” poster was distributed as part of the commemorations of World Safety Day, on 28 April, along with a small gift (a pin on badge with the OHS logo) given to all fixed direct and indirect employees in order to get them engaged with the commemorations. Lastly, a video message was released by the Chairman of the Board of Directors, which was translated into the local languages of all the CIMPOR OUs. The message was broadcast over CIMPORnet.

### THE MASCOT CIMPI

At the suggestion of South Africa, an OHS mascot was created - CIMPI, an element of communication, with a dynamic nature, created to appeal to raising awareness to and fostering the occupational health and safety culture in CIMPOR.



### GOOD PRACTICES

As planned, the Good Practices began to be disseminated in Portuguese and English versions, in a format identical to that already used to disclose information on Fatal and Serious Accidents. All these publications have proven to be of great importance since they are analysed and discussed in all the OUs of CIMPOR, whether in OHS monitoring meetings or through Daily Safety Dialogues or other communication channels, thus allowing preventive action in relation to accidents and occupational diseases.



### COMPUTER APPLICATION FOR OHS DATA PROCESSING

A computer application to process OHS data was also developed in 2010. The production start-up of this software is expected in January 2011.

### INTERNAL OHS AUDITS

14 CIMPOR employees completed the theoretical and practical training in “Risk Assessment and Safety Audits” during 2010, strengthening the current team of 13 auditors. The new group of auditors has specialists in several areas: medical, safety, production, maintenance and quality.

Once again, the programme of internal audits of the various OUs of CIMPOR conducted in 2010 was a success. 13 auditors from Portugal, Spain, Morocco, Turkey, South Africa and Brazil took part in the programme, forming multidisciplinary teams of 3 or 4 members, which audited a total of 8 Cement Units, 13 Concrete Plants, 2 Aggregate Centres and 1 Mortar Plant, in Portugal, Spain, Turkey, Egypt, Mozambique, Brazil and India.

### CHECKING DATA AND OHS POLICY

According to the commitments made under the Cement Sustainability Initiative (CSI), the 2009 OHS performance indicators were verified in 2010 by an independent, internationally recognised company, which meets all the requirements defined by the CSI, in order to ensure the transparency, consistency and reliability of the data reported by the member companies of this body.



78,864 hours of training in Occupational Health & Safety were provided in 2010, equivalent to 12.75 hours of training per capita.

40 OUs were checked: 17 cement plants, 16 concrete plants, 2 aggregate centres, 1 mortar plant and 4 OUs classified under "Other Activities", spread over 11 countries.

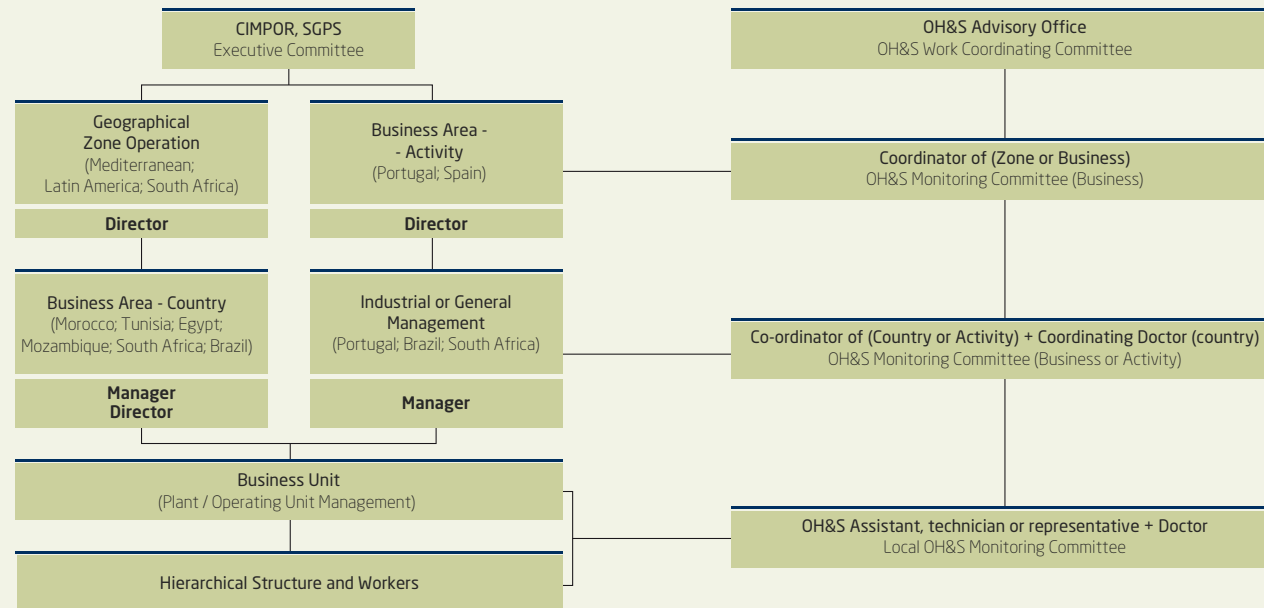
This verification did not find any critical non-conformity that might jeopardize the award of verification certificates, therefore all business activities and CIMPOR obtained a positive evaluation.

In 37 of these OUs, besides verifying the OHS performance indicators, the implementation of the Policy and Guidelines established for CIMPOR were also checked. The results of those additional checks were also very positive.

**OHSMS ORGANISATIONAL SUPPORT MODEL**

An organisational model to support the Occupational Health and Safety Management System (OHSMS) has been defined and approved. This organisational model includes a strategy and action plan, hence representing a true preventive attitude. The definition of the organisational model took into account:

- The experts of the Occupational Health & Safety support network, whose roles are assigned according to criteria of hierarchical and functional dependence, diversity of the activity and geographical location. These are defined as "competence centres" with extensive qualifications in the OHS field and they are available to the Organisational Structure of the Company in which they work, providing technical support and enhancing the OHSMS.
- The structure, based on the hierarchical responsibilities (leadership and decision) of the structure of the company (from the first to last level).
- The OH&S Monitoring Committee, which aims to coordinate and monitor the OHSMS and the engagement and interaction of all in the health and safety culture.



All employees of CIMPOR have regular medical checkups and receive information on measures to promote good health and good physical condition.

## HEALTHY EMPLOYEES

Each of the various CIMPOR companies in the different BAs develops on a regular basis, within their own OHS policy, specific Health Programmes focused on the most important local aspects.

Under such programmes, all CIMPOR employees are regularly given medical check-ups and information on preventive measures designed to promote healthy living and the good physical fitness of employees, in order to ensure effective working capacity throughout their working lives. The measures

that are implemented include the control of risks in the workplace that could result in occupational diseases and the incapacity to work, and warning on the problems of tobacco, alcohol, drugs and sedentary lifestyles.

Some of the local programmes are moving beyond a focus on physical health and are beginning to pay increasing attention to issues related to stress, the mental load arising from the pace of work, shift work and night work, monotonous and repetitive work, and overtime, among others, to avoid new forms of disease that are starting to appear with greater frequency in our society, including fatigue, sleep disturbances, depression and anxiety.

MAJOR THEMES	MAIN HEALTH AND WELL-BEING INITIATIVES
Policy of CIMPOR Health Services	<ul style="list-style-type: none"> <li>Dissemination, through the corporate magazine CIMPORNews and interviews with OHS managers on the current and future policy of the Health Services of CIMPOR.</li> </ul>
Measures Against New Types of Influenza	<ul style="list-style-type: none"> <li>Influenza Contingency Plan: it was implemented with the aim of preparing the management of CIMPOR for the impact of a possible flu pandemic situation, through the preparation of an operational response, consistent and structured to minimise the risk conditions of contagion, ensuring the safety of its employees and the continued operation of services and activities essential to business continuity - to minimise the impact of the pandemic on economic activity, maintaining the vital activity during the crisis period and preparing the rehabilitation and resumption of normal economic activity in the shortest possible time period after the pandemic (Business Continuity Plan).</li> </ul>
HIV/AIDS and Malaria	<ul style="list-style-type: none"> <li>Awareness campaigns and prevention of HIV/AIDS and Malaria in Mozambique and South Africa.</li> </ul>
Traveller Support	<ul style="list-style-type: none"> <li>Creation of support services for the traveller specific to this phase of a pandemic, disclosure of standards and providing a kit of basic medication that can be used in various travel situations/contexts in areas characterised by the existence of endemic diseases.</li> </ul>
Smoking	<ul style="list-style-type: none"> <li>Under the Internal Anti-Smoking Campaign an event was organised at the Alhandra OU Medical Centre called "Smoking - Brief Interventions" with the aim being to eventually copy it at other Medical Centres of the Cement Business over the next few years (Attachments with posters and leaflets).</li> </ul>
Alcoholic Drinks and Drugs	<ul style="list-style-type: none"> <li>The Rules on the Prevention and Control of Alcoholic Drinks and Drugs has been progressively implemented as part of a prevention and information campaign on consumption and clinical support in situations of need.</li> </ul>
Food and Healthy Lifestyles	<ul style="list-style-type: none"> <li>Campaigns in several of the BAs and through CIMPORnews to promote healthy eating habits and the regular practice of physical exercise, through the dissemination of advice and practical steps for effective self-management of health and individual welfare, control of arterial blood pressure, obesity and cardiovascular disease, diabetes, quality of ageing (e.g. "Staying Well" aimed at preventing cardiovascular disease in women, "Healthy Heart" and a "Program for Weight Management and Reduction").</li> <li>Measures to prevent ill health due to stress and incorrect working postures.</li> </ul>
Regular Medical Check-Ups	<ul style="list-style-type: none"> <li>System of regular medical check-ups for all CIMPOR employees.</li> </ul>
Equipment of OUs Medical Centres	<ul style="list-style-type: none"> <li>Ensuring that the OU Medical Centres have the human and material resources required to provide a quality service in healthcare, and to that end significant investment has been made in internal and external training. All procedures are being checked and corrected to achieve that objective.</li> <li>Selection of suppliers of health services based on quality criteria and cost-efficiency of the services provided.</li> </ul>

Our employees are continuously encouraged to identify hazards, assess risks that might endanger individual and collective physical integrity, and the importance of appropriate behaviour that prevents accidents.

**OHS TRAINING**

Perseverance on strict compliance with our OHS standards and the need to intensify awareness-raising activities on this subject aimed at our employees continued throughout the year. Our employees are continuously made aware through regular workshops, newsletters, and the local organisation of “OHS Days” and “Festival Days” festive, to act appropriately, identify hazards and assess the risks that might endanger the individual and collective physical integrity, as well as prevent accidents.

Employees of external companies providing services at CIMPOR OUs are also continually involved in internal OHS training programmes.

Besides the countless OHS training courses developed locally by the Business Areas/Operating Units, Risk Assessment and Audits training courses for managers are held at the corporate level, aimed at training internal auditors. The adopted training method has been successfully applied at various CIMPOR OUs.



The OHS data for this year and the next will be verified in 2011 by an independent external entity, in accordance with the guidelines of the Cement Sustainability Initiative (CSI).

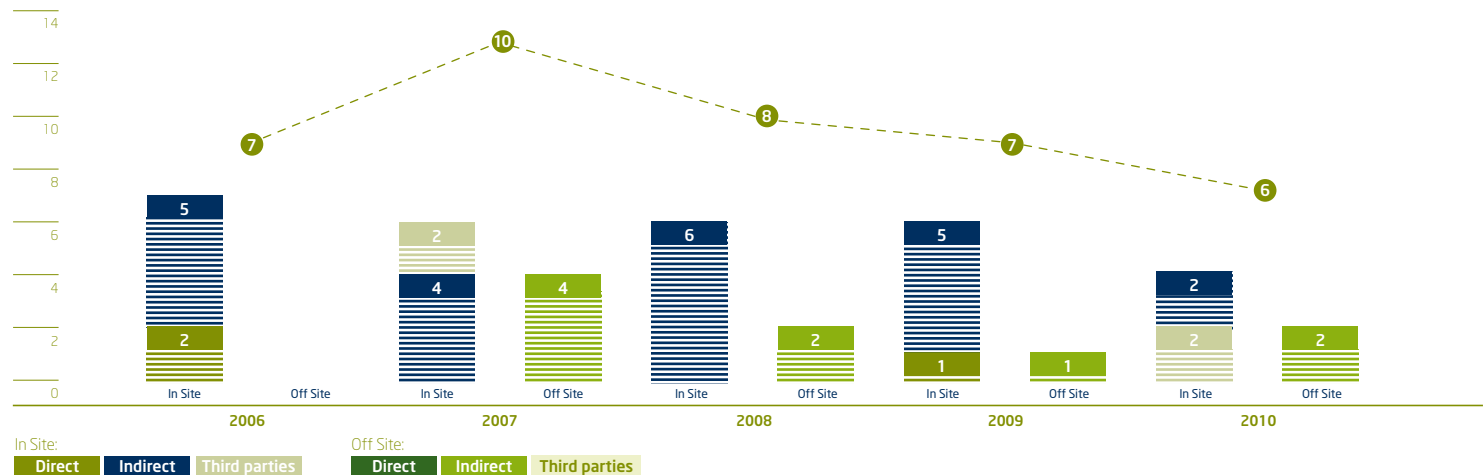
The following charts indicate the evolution of those indicators:

**OHS PERFORMANCE INDICATORS**

**FATAL OCCUPATIONAL ACCIDENTS**

Direct and Indirect Employees and Third Parties - Cement Activity

2006/2010

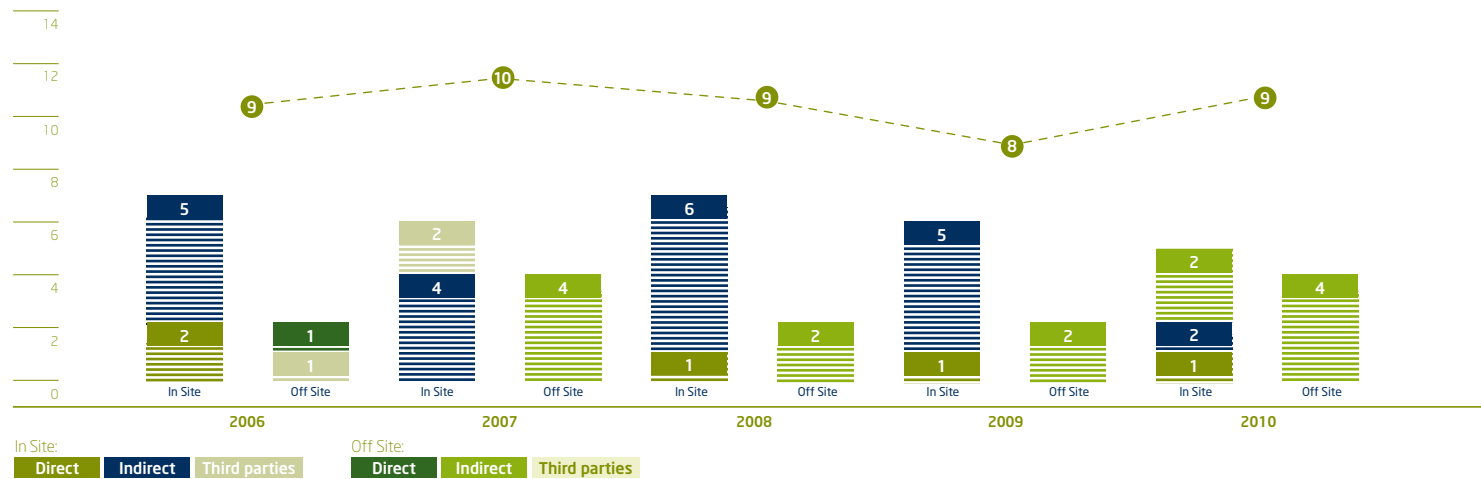


14,511 Curative Medicine examinations (on the premises) and 6,175 Occupational Medicine examinations were performed in 2010 (5,094 of which were regular check-ups, 749 sporadic examinations and 377 relative to newly recruited employees).

**FATAL OCCUPATIONAL ACCIDENTS**

Direct and Indirect Employees and Third Parties - All Activity Areas

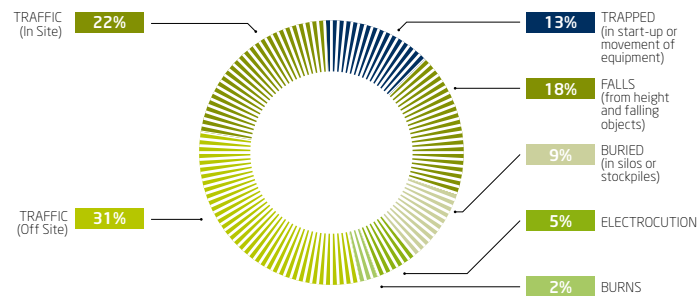
2006/2010



**FATAL OCCUPATIONAL ACCIDENT/CAUSE**

Direct and Indirect Employees and Third Parties

2006/2010



28 of the 45 fatal occupational accidents in the CIMPOR Group in the period 2006-2010 occurred in the cement business

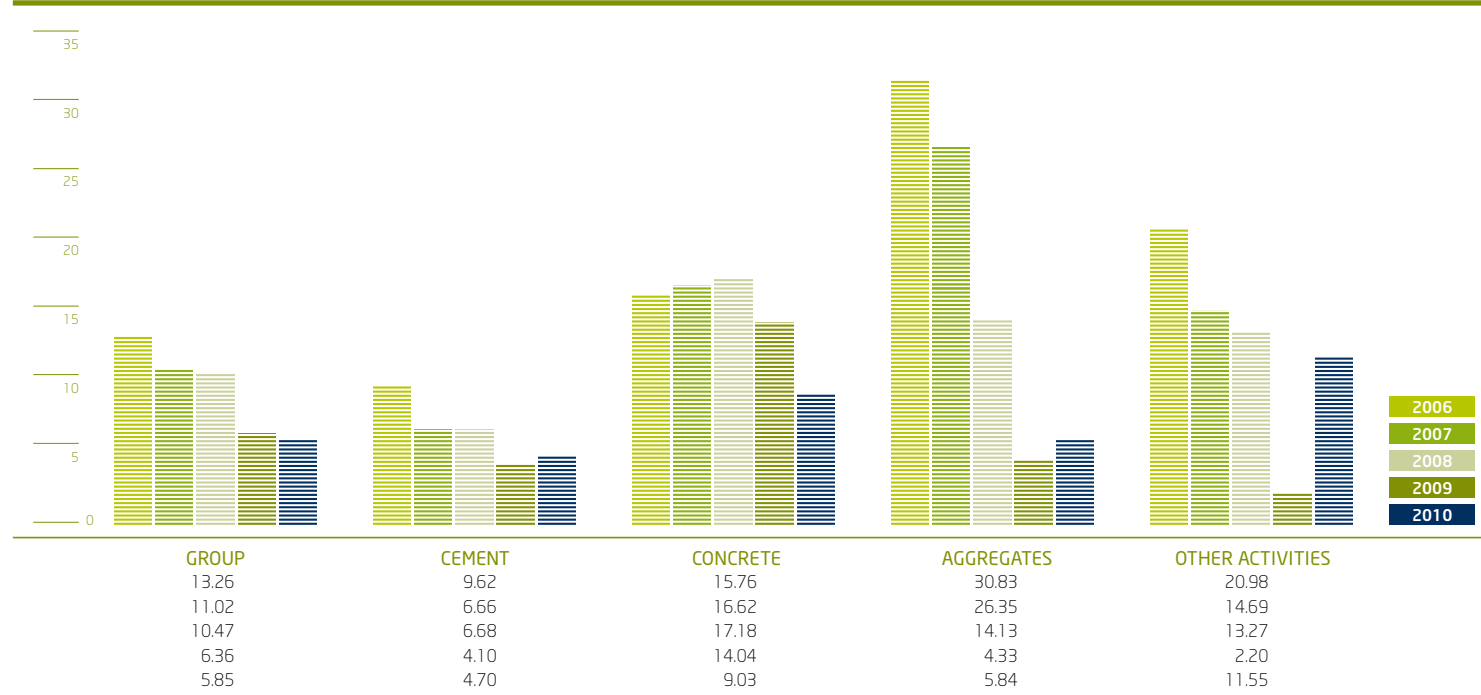


56% of the OUs connected to the Cement Business recorded ZERO ACCIDENTS with loss of working days by direct employees.

**FREQUENCY RATE / BUSINESS ACTIVITY**

2006/2010

Direct Employees



**GOOD PRACTICES FOR SAFE DRIVING AND THE SAFETY OF SERVICE PROVIDERS**

2010 was the year for the launch of the implementation of the recommendations of the CSI on “Good Practices for Safe Driving” and “Good Practices for the Safety of Service Providers”.

A number of initiatives established for the implementation of these principles have already been completed: the documents were translated into Portuguese and sent to CSI for publication on its site; the requirements were communicated in all OUs and integrated into the requirements of CIMPOR; a document was created that permits gap analysis and the preparation of action plans for the implementation period (2010-2014) in each OU (except the Cape Verde OUs).

[READ HERE THE CASE STUDIES \(PAGES 129 TO 139\)](#)

**MEASURING PROGRESS****OCCUPATIONAL HEALTH & SAFETY****FATAL ACCIDENTS**

1. Number of fatal accidents for direct employees: 0 (1 in 2009) (the target of 0 accidents achieved).
2. Mortality rate per 10,000 hours worked for direct employees: 0 (1.69 in 2009) (the target of 0 accidents achieved).
3. Number of fatal accidents for indirect employees (contracts and sub-contracts): 4 (6 in 2009) (missed target of 0 accidents).
4. Mortality rate per 10,000 hours worked for indirect employees: 4.18 (6.66 in 2009) (missed target of 0 accidents).
5. Number of fatal accidents for third parties: 2 (0 in 2009) (missed target of 0 accidents).

Of the four fatalities of indirect employees, two were due to falls from height, one was due to a motor vehicle accident on plant premises and one was due to a road traffic accident off premises. The two third-party fatalities resulted from motor vehicle accidents on plant premises.

**NOTE:** The perimeter considered for OHS purposes, as in the previous year, is the CIMPOR Cement Business, also including the entire management structure of each Business Area (e.g. head office) associated with the Cement Business, besides the OU structure.

**ACCIDENTS WITH LOSS OF WORKING DAYS**

1. Number of accidents of direct employees with loss of working days: 59 (51 in 2009).
2. Frequency rate of accidents of direct employees with loss of working days per 1 million hours worked: 4.70 (4.10 in 2009) (the target of <4.09 for 2010 was not achieved).
3. Severity rate per 1 million hours worked for direct employees: 289.8 (239.4 in 2009) (the target <192 for 2010 was not achieved).
4. Number of working days lost involving direct employees: 3638 (2975 in 2009).
5. Number of accidents of indirect workers (on contract and sub-contract) with loss of working hours: 78 (122 in 2009).
6. Frequency rate of accidents of indirect employees with loss of working days per 1 million hours worked: 4.51 (7.00 in 2009).

**NOTE:** The perimeter considered for OHS purposes, as in the previous year, is the CIMPOR Cement Business, also including the entire management structure of each Business Area (e.g. head office) associated with the Cement Business, besides the OU structure.

**ACCIDENTS WITHOUT LOSS OF WORKING DAYS**

1. Number of accidents of direct employees without loss of working days: 112 (98 in 2009).
2. Number of accidents of indirect workers (on contract and sub-contract) without loss of working hours: 155 (193 in 2009).
3. Total Recordable Accident Rate: 13.62 (12.07 in 2009).

**NOTE:** The perimeter considered for OHS purposes, as in the previous year, is the Cement Business, also including the entire management structure of each Business Area (e.g. head office) associated with the Cement Business, besides the OU structure.

**GOALS AND NEXT STEPS**

The targets for 2010 were met in relation to the number of fatal accidents of direct employees, and there was a sharp decrease in the number of accidents of indirect workers with loss and without loss of working days.

The number of fatalities of indirect workers and third parties fell short of the goals - zero accidents.

In spite of the priority given to OHS aspects in CIMPOR, unfortunately four fatalities among indirect employees and two among third parties were recorded in the Cement Business in 2010. In 2009, there was 1 fatal accident with direct employees, 6 with indirect workers and 0 with third parties.

The number of accidents of direct employees with lost working days developed unfavourably from 51 in 2009 to 59 in 2010, and the number of days lost also grew from 2,975 in 2009 to 3,638 in 2010.

The results for health and education, although very positive, have not yet achieved their goals, which have proven to be too ambitious.

The improvement suggestions submitted by employees have proven to be relevant and reveal the increasing involvement of employees.

Furthermore, a number of actions that will continue into 2011 and beyond were undertaken:

- \* 3rd Annual OHS co-ordinators meeting;
- \* Creation of 7 teams of 3/4 OHS auditors to embody the Annual OHS Audit Plan for 2010;
- \* Training of 14 new CIMPOR OHS auditors, who have completed the theoretical and practical training in "Risk Assessment and Safety Audits";
- \* Implementation of the Annual OHS Audit Plan of 2010 (8 Cement plants, 13 Concrete plants, 2 Aggregate centres and 1 Mortar plant were audited);
- \* After performing a "gap analysis" of all OUs, individualized action plans are developed for the implementation of the recommendations of good practice on safety of drivers and contractors, which will be implemented until 2014;
- \* OHS Goals and Action Plan Evaluation Meetings;
- \* Commemoration of 28th of April "World Safety Day" with a video message by the Chairman of the company, the sending to all direct employees of gifts to commemorate the date, as well as corporate posters sent to all CIMPOR units;
- \* Disclosure of Institutional Good Practices adopted in several OUs of CIMPOR;
- \* Shift into the testing stage of the software solution for processing OHS information.

In 2011, we expect to conduct competitions, meetings and training/awareness sessions to promote the participation of all employees in OHS activities, updating and extending the themes existing on the OHS portal, raising the awareness of top managers (strengthening visible & felt leadership), developing new corporate procedures, reviewing service orders relating to the notification of Fatal and Serious Accidents, Performance Indicators and the OHS Network, defining methodologies for self-assessment and safety inspection, as well as developing initiatives that promote the fostering of a culture of safety.





## INNOVATION AT NATURE'S SERVICE

We at CIMPOR, aware of the environmental impact of our activities, also invest in Innovation, Research and the Development of new ways to optimise our performance, promoting efficiency and reducing emissions to the atmosphere. As a business that consumes resources in a world of limited resources we devote our full attention to the search for clean and renewable alternatives that will guarantee a more sustainable future.

**CIMPOR. Our soundness is in your life.**







# IV ENVIRONMENT



*Igniscum Real*

## ENVIRONMENT

The environment is a fundamental pillar of our sustainability policy due to the fact that we are an industry heavily using natural resources. Our environmental performance is measured and assessed by the Corporate Technical Centre, which decides on the investments to be made to mitigate the impact of our activities. Reporting is based on directives developed by our specialists considering the best practices in this field.

### INVESTMENT IN SUSTAINABILITY

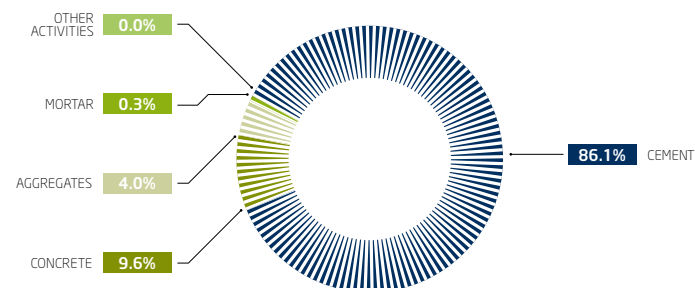
Investments in Sustainability(\*) refer to, under the criteria of CIMPOR, investments that are not directly aimed at raising turnover but at the continuity of the business in a sustainable form. Examples of such are investments in land and quarries, investment in the environmental fields, social responsibility and safety, and investments in modernisation aimed at raising the level of efficiency of the operating units and ensuring the ongoing nature of operations.

Cement production is the core business of the company and so it has received 86.1% (92.5% in 2009) of the total investment in sustainability for all business activities – cement, concrete, aggregates, mortar and others) as indicated in the first chart below.

Moreover, investments in Sustainability in the Cement Business accounted for 24.6% (18.4% in 2009) of total investments of CIMPOR in 2010, of a total for that year of around 149 million euros (265 million euros in 2009) and, from another angle, it was equivalent to about 31.5% of total investments in the Cement Business, as depicted in second chart.

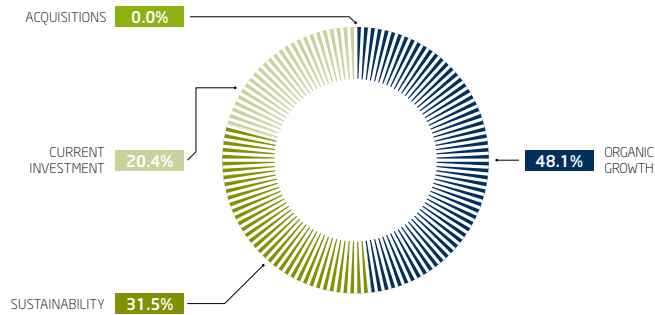
The evolution of investments in sustainability in the Cement Business between 2004 and 2010 can be seen in the last chart about this topic.

**% OF SUSTAINABILITY INVESTMENT BY ACTIVITY**  
(Cement, Concrete, Aggregates, Mortar, Others)



CIMPOR is focused on the continuous improvement of its processes and products, adopting the best available technology and conserving the environment.

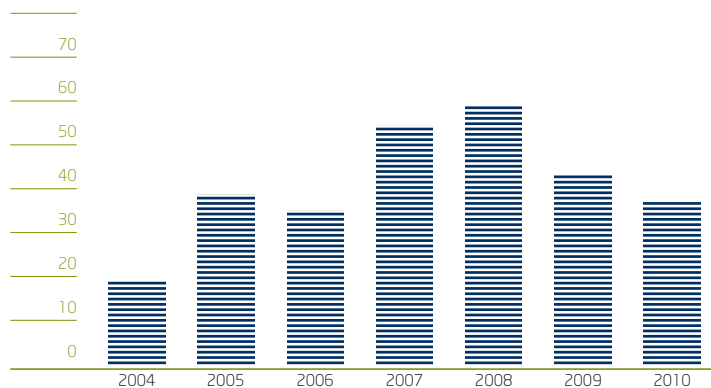
**DISTRIBUTION OF INVESTMENT IN CEMENT BUSINESS**



- **Investment in Land and Quarries:** guaranteeing the supply of raw materials (e.g. purchase of new reserve, defence and protection areas, new access roads to quarry faces and other investments in quarries that are not directly associated with environmental or social aspects but aim at the long-term continuity of the business)
- **Environmental/Social Investment:** abiding by CIMPOR's sustainable development policy, i.e. protecting and/or improving the environment, rehabilitating quarries, preventing loss of biodiversity, re-landscaping, improving internal and external social conditions, ensuring safety and occupational health and other measures to meet the company's social responsibilities;
- **Investment in Modernisation:** increasing efficiency at plants and reducing their costs and/or increasing product quality by introducing or replacing manufacturing equipment, systems or processes to ensure the continuity of operations

**SUSTAINABILITY INVESTMENT**  
(Million euros)

(Cement Business)



**Note (\*):** Investments of CIMPOR are classified in four major groups for all business activities: Acquisitions, Organic Growth, Sustainability and Current. In accordance with CIMPOR's criterion, investments in sustainability are investments that do not directly increase turnover, but are aimed at the continuity of business in a sustainable form.





## RESEARCH & DEVELOPMENT (R&D)

CIMPOR has several ongoing programs to improve industrial performance and conduct research and development (R&D), in order to maintain its competitiveness by actively adopting best practices and technologies, anticipating the entry into force of new regulations and establishing partnerships with various institutions in R&D programmes.

On the one hand, CIMPOR is focused on the continuous and incremental improvement of its processes and products, the comparative analysis of international practices, the adoption of the best available technologies and conservation of the environment in the countries where it operates, through know-how acquired over the years, which has allowed us to continuously improve the performance of new industrial units in terms of technical expertise and management. It is also focused on increasing the longevity of the reserves of raw materials, the control of by-products, operational productivity, environmental performance and the quality of CIMPOR products, in order to reduce production costs and thus increase our competitiveness in the short and medium-term.

Moreover, CIMPOR develops long-term strategies based primarily R&D programmes, aiming to meet future challenges of the industry. The R&D initiatives are sometimes directly steered by CIMPOR, and other times in partnership with universities and research institutes of international standing. The issues of climate change are currently the key driver of many of these initiatives.

Accordingly, in countries where CIMPOR operates it has strengthened its commitment to universities and public and private research centres through various R&D projects, support provided to doctoral and masters courses and other forms of sponsorship, in order to develop key skills in areas defined as priorities.

The investment in R&D has increased significantly over the last four years when compared to previous periods, and it is a fundamental pillar of our long-term strategy.

Our projects have continued in 2010, with particular focus on reducing CO<sub>2</sub> emissions associated with the cement manufacturing process, which is perhaps the greatest challenge of our industry for the next few years, the development of new hydraulic binders, the use of alternative fuels and raw materials, and new equipment for the cement industry.

## MAIN R&D AREAS OF THE CIMPOR GROUP

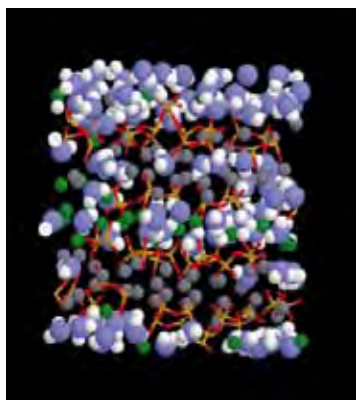
Among the various lines of research that have been followed, we highlight in particular:

**Belitic Clinker:** This comprises the exhaustive study of technical and economically feasible solutions that make it possible to use a mixture of raw materials with lower CaCO<sub>3</sub> and higher SiO<sub>2</sub> content without affecting the quality of the final product. This will not only achieve a reduction in the consumption of the thermal energy required to decarbonate raw materials, a chemical process that is heavily endothermic, but also reduce directly associated CO<sub>2</sub> emissions and the consumption of refractories. The control of this process is going to enable the production of clinker richer in C<sub>2</sub>S and with higher grindability, known as belite clinker. Furthermore, and along another tract, since it is necessary to analyse which is the most favourable solution, CIMPOR has also been seeking to identify ways of substantially increasing clinker reactivity, with a view to incorporating more additives, and to expand on the study of producing clinker from new raw materials.

**Geopolymers:** Another area of research concerns the analysis of the alkaline activation process of aluminosilicates (i.e. so-called geopolymers, members

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CIMPOR develops long-term strategies based on research and development (R&D) programmes, aiming to meet future challenges of the industry.

Our projects continued in 2010 to be primarily focused on reducing CO<sub>2</sub> emissions associated with the cement manufacturing process, which is perhaps the greatest challenge of our industry over the next few years.



of the family of inorganic polymers such as kaolinite, pozzolana and others) through the combination of sodium or potassium hydroxides (NaOH, KOH) and sodium or potassium silicates, for example.

**Nanoengineering of C-S-H:** A line of research that is more steered to aspects of technology that will “decode” the atomic structure of C-S-H (calcium silicate hydrate), the main “building block” of the structure of cement, in order to identify and understand the scientific foundations and mechanisms at the “nano” scale that determine the behaviour of the C-S-H structure and its characteristics and properties. Taking advantage of the “decoding” of the basic structure of C-S-H and a consistent molecular model for C-S-H developed by Massachusetts Institute of Technology (MIT) under this project, research is now geared to manipulating the chemical composition and molecular structure of cement in order to produce a less energy intensive hydraulic binder and therefore reduce emissions associated with CO<sub>2</sub>, without cement losing its mechanical characteristics, durability, availability and the widespread use at a low cost.

**Production of artificial pozzolana:** The production and incorporation of artificial pozzolana in the manufacture of blended cements has been the subject of several tests in some installations and a few commercial applications in CIMPOR.

**Carbon Capture and Sequestration (CCS):** Besides investigating the development of new products, CIMPOR continues to assess several developing technologies such as the capture and sequestration of carbon, in its various facets, though, many of these technologies are not yet commercially available nor is there any clear idea of their full potential on an industrial scale. CIMPOR, to extend its knowledge in this field, has been monitoring this field through the working groups, international studies and projects in the area. In 2009 it joined a large-scale R&D partnership led by the European Cement Research Academy (ECRA), which aims in the long-term to build a demonstration plant of this type of technology for the cement industry (oxyfuel and post combustion). CIMPOR also participates, in Portugal, in an R&D partnership aiming to develop a pilot facility for the capture and sequestration of CO<sub>2</sub> from the chimneys of the clinker kilns to produce bio-fuel and biomass from micro-algae.

**Alternative Fuels and Raw Materials:** One of the projects of note in this area is the so-called “Eco-fuel” project, with the aim of the production of a new type of alternative fuel of homogeneous composition from municipal solid waste, through the use of artificial intelligence technology.



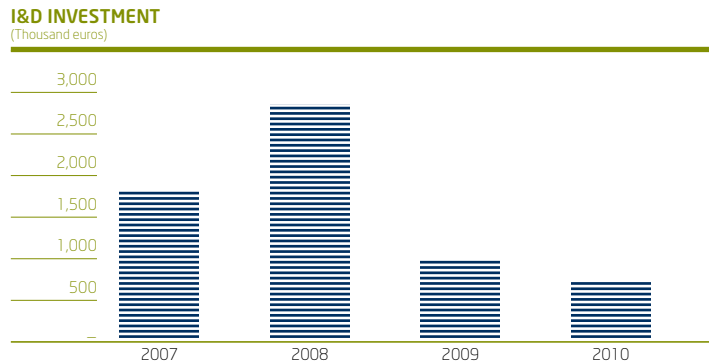
**Others:** Areas such as waste recovery as a raw material to produce clinker, cement and concrete and concrete recarbonation have been the subject of regular research. A subject that also continues to merit attention by CIMPOR is the recycling of construction waste and demolition of buildings, through the use of demolition debris as aggregates in concrete production and as a raw material for clinker production. Several trials have been carried out in this field. In relation to the use of waste as a raw material for clinker production, some OUs have developed projects to reuse the waste from the demolition of silos and buildings in older sections of the plant, after the necessary crushing and screening.

The Technical Centre (CIMPOR TEC) is the corporate functional department that provides the necessary technical support to the top management of CIMPOR and to each Business Area. It is also responsible for providing technical assistance to all the Group's cement plants. In the cement business it is responsible, in particular, for promoting the sustainability policy and corporate technical policies, the evaluation and adoption of the best available techniques, conducting performance tests of the plants, the control and extension of the useful life of the raw material reserves, management of the maintenance systems and the design of technical training programmes.



CIMPOR TEC is also responsible for the preparation and management of annual and multi-year investment programmes, in cooperation with other bodies directly involved, and supporting the implementation of such programmes and managing the CIMPOR corporate R&D programme.

The investment in R&D concerning project procurement, capital expenditure and the cost of personnel assigned to the activity has grown in share over the past four years. The annual change in euros is shown in the following graphic:



**EMISSIONS I - CLIMATE PROTECTION AND CO<sub>2</sub> EMISSIONS MANAGEMENT**

Detaching economic growth from CO<sub>2</sub> emissions currently represents one of the largest global challenges and requires that companies make an effort to significantly improve the efficiency of production, products and consumption in terms of carbon intensity and energy.

All economies and sectors of society must contribute in an equitable way to solving the problem of climate change and energy security, according to their technical, economic and socio-economic development capacity.

Climate change must be increasingly perceived, from a strategic point of view, as a market transition and less so as an environmental issue. The signs of this market transition are starting to become evident. The international commitments that are being negotiated regarding the control of greenhouse

gas emissions and the establishment of a market price for carbon will affect the price of energy, products, services and have an impact on sectors that, like ours, heavily depend on energy, thus creating a domino effect throughout the value chain of companies.

**CO<sub>2</sub> EMISSIONS MONITORING AND CERTIFICATION IN THE CIMPOR GROUP**

CIMPOR, as part of its climate change policy, monitors its carbon footprint in order to determine its level of exposure, to set targets to reduce this footprint by developing specific projects and evaluating business opportunities, and finally, by seeking to participate and influence the process of developing policies in this area through participation in national and international forums.

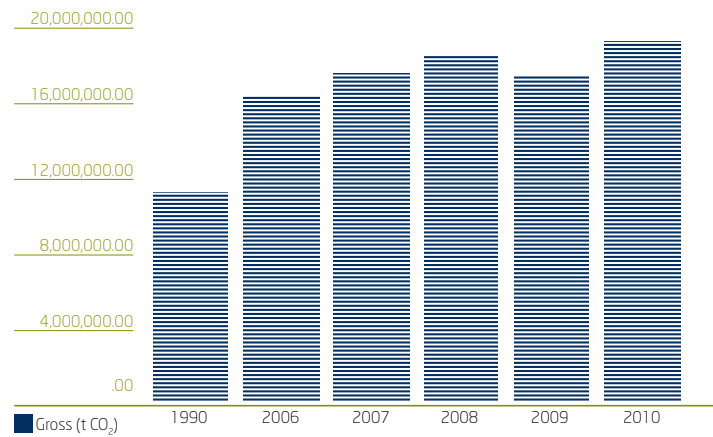
The CO<sub>2</sub> emissions of CIMPOR have been calculated and monitored since 1990, according to the "CO<sub>2</sub> Protocol for the cement industry" developed by the World Resources Institute/WBCSD based on the GHG Protocol. Moreover, CIMPOR CO<sub>2</sub> emissions have been audited and certified by an independent external body since 2005, following the IETA Verification Protocol Version 2.0 for verification of EU ETS emissions reports and meeting the requirements of ISO 14064-3 standard.



**THE CIMPOR GROUP'S CONSOLIDATED CO<sub>2</sub> EMISSIONS**

Total consolidated emissions of CIMPOR have been registering an inevitable increase over the years due to the acquisition policy and investment in organisation growth. However, the overall level of specific CO<sub>2</sub> emissions has performed well. The evolution of these emissions from 1990 to 2010 is summarised in the charts below:

**TOTAL GROSS EMISSIONS OF CO<sub>2</sub> (t)**



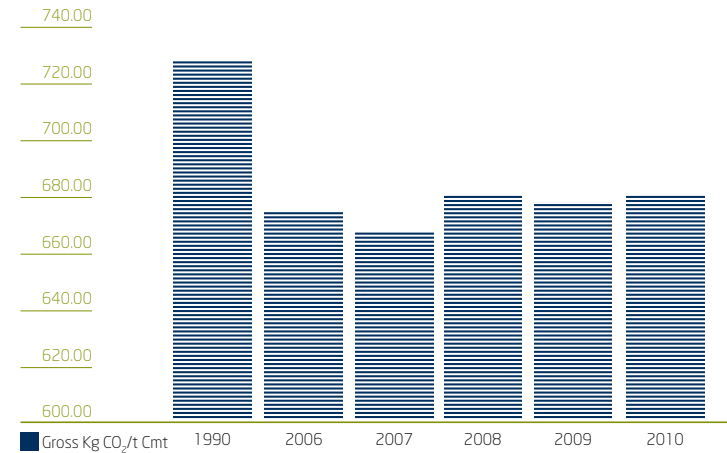
**NOTE:** The charts for CO<sub>2</sub> emissions reflect CIMPOR emissions for every year since 1990, always considering the consolidation perimeter of the Group for that year extended to previous years. In other words, the 1990 baseline and for subsequent years is updated whenever a new OU is acquired that was operating on that date or during some of the subsequent years.

**Total Emissions**

The increase in total (gross) emissions of CO<sub>2</sub> from 17.7 million tons in 2009 to 18.9 million tons in 2010, considering the current consolidation perimeter, is due to the sharp increase in clinker production in China, Brazil, Turkey, Tunisia and to a lesser extent, in Mozambique. Clinker production in China, in particular, almost doubled.

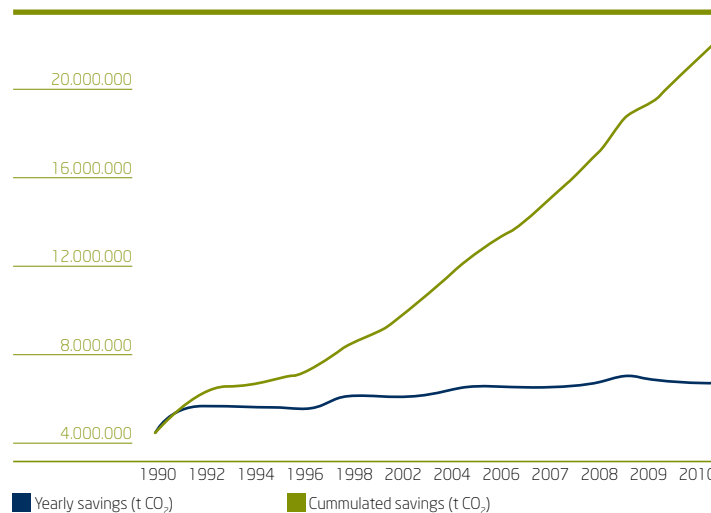
The uncoupling of cement production from CO<sub>2</sub> emissions is evident. Despite the increase in cement production of around 71.4% between 1990 and

**SPECIFIC GROSS EMISSIONS OF CO<sub>2</sub> / t CEMENTITIOUS PRODUCT**





The CO<sub>2</sub> emissions of CIMPOR have been calculated and monitored since 1990, according to the “CO<sub>2</sub> Protocol for the cement industry” developed by the World Resources Institute/WBCSD.



2010, overall gross total emissions of CO<sub>2</sub> of increased by only around **60%** in the same period, considering the current consolidation perimeter. The notable improvement of the energy performance of the manufacturing process, changes to fuels with lower emission factors and, especially, the significant increase in additives used in cement, explain this favourable evolution.

**Specific Emissions**

Direct CO<sub>2</sub> emissions of CIMPOR have substantially improved from the figures recorded in 1990, particularly in respect of specific CO<sub>2</sub> emissions (gross or net) whether per ton of clinker or per ton of cementitious product, although there was a slight reverse in the general development from 2009 to 2010.

Specific emissions (gross) per ton of cementitious product evolved from a value higher than **725** in 1990 to **680** kg of CO<sub>2</sub>/ton of cementitious product in 2010 (**677** in 2009). Specific emissions (gross) per ton of clinker evolved from **881** in 1990 to **876** kg of CO<sub>2</sub>/ton of clinker in 2010 (**870** in 2009).

An improvement has also been observed with regards to specific indirect emissions, due to the ongoing measures to rationalise energy consumption.

**CO<sub>2</sub> EMISSIONS FROM THE CEMENT MANUFACTURING PROCESS**

The cement industry currently produces around 5% of worldwide anthropogenic emissions of CO<sub>2</sub>. Half of such emissions are produced by the chemical process of production, 40% stems from the fuel used and the remaining 10% is indirectly emitted through electricity use and transport.

Cement production requires the intensive use of raw materials and electricity and thermal energy, which results in air emissions, with carbon dioxide (CO<sub>2</sub>) being the most significant.

The amount of CO<sub>2</sub> released depends on the chemical composition of the raw materials, the type of fuel used and the specific heat consumption of the kiln, which is in turn related to the type of technological process of the production line.

The clinker obtained is then ground with other additives to produce cement. (see reverse side of back cover of Report)

**CIMPOR CLIMATE CHANGE POLICY**

It is not anticipated that our OU may be significantly affected directly by the physical consequences of climate change and any disruptions due to natural


**CIMPOR conducts a review of its strategic position on climate change compared to that of its business competitors, in order to identify the risks and opportunities and to prepare for this market transition.**

disasters related to climate change should, nonetheless, be temporary. However, the agreements and regulations on this subject will alter the core elements of the business strategy, such as the economic aspects of production, cost competitiveness, investment decisions and the value of



different types of assets, thereby affecting our operations, our products and our relations with customers and suppliers.

CIMPOR has planned the course it will take in this area. The risks associated with the regulatory aspects of CO<sub>2</sub> are strictly monitored, in order to calculate and control overall exposure to those risks and give appropriate support to the decision-making process.

Moreover, CIMPOR conducts a review of its strategic position on climate change compared to that of its business competitors, in order to identify the risks and opportunities and prepare for this market transition.

The policy to reduce specific CO<sub>2</sub> emissions per ton of cement product (clinker and cement) is based on a series of short, medium and long-term strategies that are extensible and regularly communicated to the entire organisation:

#### **Short-Term Strategies**

##### **Reduction of the quantity of clinker needed to manufacture one ton of cement by increasing the production of blended cements: clinker / cement factor**

The clinker can be partially replaced by the addition of other mineral compounds (e.g. fly ash, slag etc.) usually known as cement products, to produce various standardised types of cement known as blended cements. This also means the general reduction of the amount of virgin raw materials required. This approach also means the reduction of the quantity of fuel required to produce one ton of cement and, in some cases, the reduction of electricity consumption by cement grinding facilities.

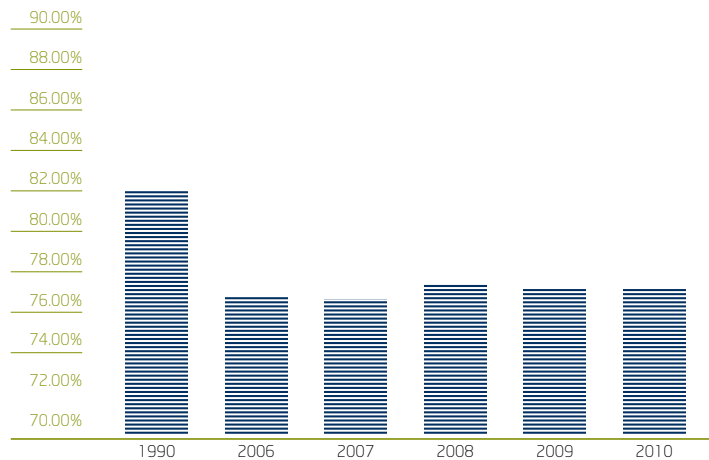
CIMPOR has therefore been committed to producing and creating the market for so-called blended cements, that are more competitive and with a level of embedded carbon that is lower than conventional products. The product mix has evolved in the direction of cements with lower CO<sub>2</sub> levels. Between 1990 and 2010, the average rate of incorporation of clinker in cement by CIMPOR has fallen almost 7%. Market factors and rules in each country as well as the availability of these mineral compounds have however limited the capacity to improve performance substantially in the future in this field.

The clinker / cement factor indicates the fraction of clinker incorporated into the cement. Ordinary Portland cement (OPC) is the basic type of cement and

it has a clinker / cement factor of around 95%. Added gypsum accounts for the other 5%.

CIMPOR's average clinker/cement factor in 2010 was **76.7%**, as shown in the following chart.

**CLINKER / CEMENT RATIO (%)**

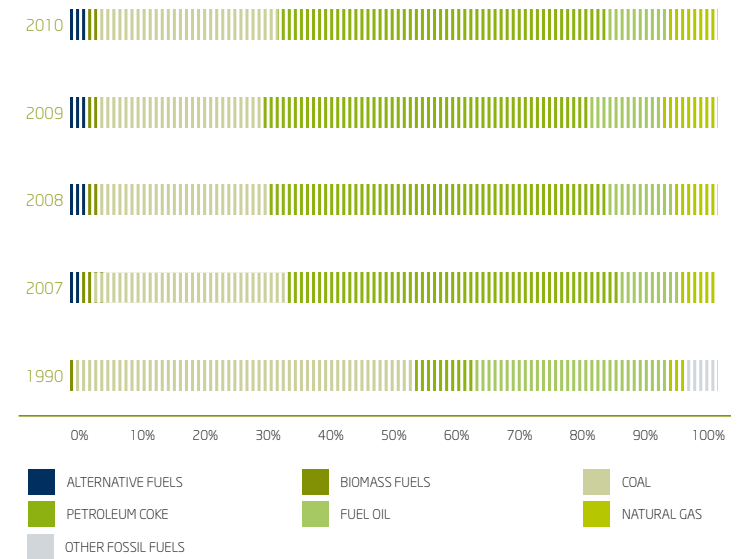


**Increase the percentage of energy from alternative fuels, especially from fuels with high biomass fractions: thermal substitution rate.**

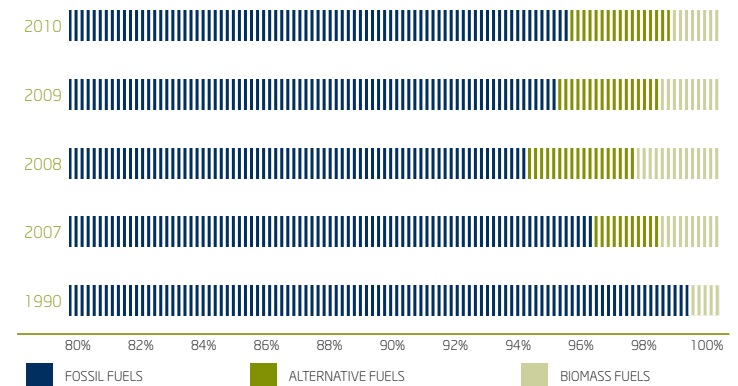
The substitution of non-renewable fossil fuels for alternative fuels originating from urban and industrial waste or by-products is quite common practice throughout the world, because it allows a company to provide a safe service to society, towards the elimination of waste generated and it represents, together with blended cements, one of the cement industry's main drivers for the reduction of CO<sub>2</sub> emissions, especially if those fuels contain a high biomass fraction. Shredded or whole used vehicle tyres and biomass are currently the main alternative fuels used by CIMPOR.

In 2010, the overall rate of substitution of non-renewable fossil fuels for alternative fossil and biomass fuels was 6.0%, which is slightly down on 2009 due to the continued growth of the CIMPOR business activity in countries that do not use alternative fuels as it did in 2009.

**DEVELOPMENT OF FUEL MIX**



**DEVELOPMENT OF FUEL MIX**



### Substitution of fuels with higher CO<sub>2</sub> emission factors for fuels with lower CO<sub>2</sub> emission factors: kg CO<sub>2</sub>/GJ emission factor.

The increased use of petroleum coke instead of coal in various CIMPOR plants, the most recent of which are the OUs in Turkey, is part of the set of initiatives that have been contributing to the reduction of CO<sub>2</sub>/t of clinker since 1990. Likewise, the start-up in 2004 of the new production line at Amreyah, Egypt, with the use of natural gas and conversion to natural gas, which was also successfully carried out at the Matola plant in Mozambique, in 2008, contributed to that same result.

The gradual increase in the use of alternative fuels has also been earmarked, such as the use of whole and shredded tyres instead of coal and petroleum coke at the plants in Brazil, the co-processing of animal meal (biomass) at Alhandra OU, the use of biomass and refuse-derived fuels (RDF), and used tyres, at Loulé OU, and industrial waste (solvents and oil sludge) at Souselas OU, all in Portugal.

The suspension in 2007 of the co-processing of tyres at the Oural OU in Spain, the increased exposure of CIMPOR in recent years to countries like South Africa, India and China, which exclusively use coal as the fuel for their kilns, and to a lesser extent Turkey, have prevented a sharper improvement of the value of specific CO<sub>2</sub> emissions. This fact could be somewhat offset by the start-up of co-processing CDRs at Portugal's OUs at the Oural and Toral de los Vados OU, and the planned start of co-processing in the Morocco and South Africa Business Areas.

**NOTE:** The typical emission factors of the different fuel types are: petroleum coke (92.8 kg CO<sub>2</sub>/GJ), coal (96.1 kg CO<sub>2</sub>/GJ), shredded tyres (85 kg CO<sub>2</sub>/GJ) and natural gas (56.1 kg CO<sub>2</sub>/GJ).

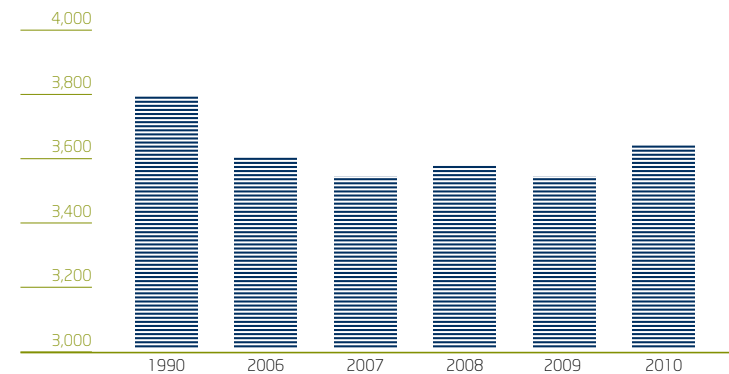
### Increase the thermal energy efficiency of the clinker production process: specific thermal consumption

Specific thermal consumption is the total consumption of energy of the clinker production lines per ton of clinker produced. The thermal efficiency of plants is influenced, in the first place, by the type of technology used for production, though it is also quite affected by the regularity of the rawmix feed, operating conditions, kiln conduction stability and by the reliability of kiln operation. At this time, All CIMPOR plants currently have dry-system production lines using the most efficient and state of the art technology, and some have automated conduction systems.

The thermal efficiency of the CIMPOR kilns has improved from 3,794 MJ per ton of clinker in 1990. The year of 2010 registered, for the first time in that

series from 1990, a year-on-year reverse in the reduction trend, for reasons of economic climate, obtaining a value of 3,635 MJ/ton of clinker.

### SPECIFIC THERMAL CONSUMPTION MJ/ t CLINKER (Clinker Production)



### Increase the electricity efficiency of the clinker and cement production process to reduce indirect CO<sub>2</sub> emissions: specific electricity consumption

The reduction of specific electricity consumption is an important way for the cement industry, as an intensive electricity consumer, to contribute to the reduction of indirect CO<sub>2</sub> emissions, i.e. the emissions generated upstream of the operating units by electricity producers.

Electricity consumption represents about 12 to 15% of total energy consumed by the cement manufacturing process. The measures to rationalise energy use and the investment in more modern equipment that continuously improves the energy performance of industrial equipment, therefore form part of CIMPOR's policy, and have been, over the years, the subject of voluntary agreements with the governments of some of the countries in which we operate.

### Medium-Term Strategies

#### Modernisation of the oldest clinker lines and building new ones: specific thermal consumption

The improvement of specific thermal energy consumption from 1990 to the present day is also due to the closing of old lines, the construction of more

Specific consolidated gross emissions of CO<sub>2</sub> in 2010 were 680 kg CO<sub>2</sub>/ton of cementitious product.



efficient lines at Campo Formoso, Brazil and at Amreyah CCC, Egypt, and the renovation in the recent past of the production lines in Portugal, Spain, Morocco and Tunisia. The start-up in 2008 of one new line (South Africa) and three revamped lines (2 in Spain and 1 in Brazil), combined with the start-up of one new line in Turkey and one new line in China, both in 2009, and also one new line in China in 2010, will contribute to the continued favourable development of this indicator and other directly related indicators.

#### **Recovery of waste heat from hot process gases: specific electricity consumption**

The recovery of waste heat from process gases to generate electricity has been under study for several years and the first project of this type was implemented in CIMPOR China in 2008. The waste heat from process gases (pre-heating tower and kiln cooler) that was not used for drying raw materials, solid fuels and cement additives, began to be harnessed

in 2009 for generating electricity. This new use allows CO<sub>2</sub> emissions to be indirectly reduced, as a smaller amount of electricity from the grid is consumed in the ordinary operation of the plant. Other possible projects of this type are still being studied for several CIMPOR Business Areas. Two new projects of this type are now nearing completion in China and India.

#### **Increase the percentage use of totally or partially decarbonated alternative raw materials: raw material substitution rate**

CIMPOR will also seek in this field, given the intensity of use of natural resources to its business activity, and through a long-term quarry management policy, to follow trends concerning the growing use of totally or partially decarbonated alternative raw materials - filter ash, ungranulated slag, SPL, coal tailings, and others - and the recycling of construction and demolition waste, using such as an alternative raw material for manufacturing clinker, thereby providing a service to society, whenever such alternatives are available in each Business Area. This is another possible course of action for CIMPOR aiming to reduce specific CO<sub>2</sub> emissions per ton of clinker produced, albeit with a rather limited impact.

#### **CDM/JI Projects, Carbon Funds and Emissions Trading**

CIMPOR has sought to take advantage of the distribution of its asset base/ cement production facilities in different countries (e.g. Morocco, Tunisia, Brazil, South Africa, Mozambique and China) to explore the potential of the flexibility mechanisms established by the Kyoto Protocol (emissions trading and CDM projects) in order to obtain carbon credits that could be used in the European market for trading CO<sub>2</sub> emissions (EU ETS).

The highly restrictive nature of the rules of CDM projects meant that most of the possibilities studied did not come to fruition, making this route very uninteresting, leading to a fading interest in this pathway at least while the future of this type of flexibility mechanism remains unclear.

CIMPOR has held, since 2007, a share in the Luso Carbon Fund, with the aim of diversifying the risk associated to the development of such projects, obtaining financial gains in the CO<sub>2</sub> market. This carbon fund invests in a varied portfolio of CDM projects in different parts of the world.

Furthermore, CIMPOR occasionally bought/sold allowances in the CO<sub>2</sub> emissions market in 2010, to manage the shortage/surplus of emission allowances, held at any time, relative to the actual production of the OUs in Portugal and Spain.

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The average clinker / cement factor of CIMPOR in 2010 was 76.7%.

### Long-Term Strategies

The long-term strategies are mainly based on research and development (R&D), sometimes coordinated by CIMPOR directly, sometimes in partnership with prestigious research institutes.

The investment in R&D has significantly increased over the last four years and it is a fundamental pillar of CIMPOR's long-term strategy to tackle climate change.

#### R&D Projects: Development of clinkers and alternative products and Carbon Capture and Sequestration (CCS)

In recent years CIMPOR has been increasing investment in research and development projects (R&D) with prestigious universities, particularly projects related to the theme of climate change. This is the case with some studies on the production of belite clinker and geopolymers, nano-engineering research into calcium silicate hydrate (C-S-H), carbon capture and sequestration, and other fields, as detailed in this report.



## MEASURING PROGRESS

### CLIMATE PROTECTION AND CO<sub>2</sub> EMISSIONS MANAGEMENT

#### OVERALL CO<sub>2</sub> EMISSIONS

1. Number of CIMPOR operating units: **40 - 26 cement plants** and **14 grinding plants**.
2. Percentage of operating units using the WRI/WBCSD CO<sub>2</sub> Protocol to inventory emissions: **100%**.
3. Overall gross specific CO<sub>2</sub> emissions per ton of cementitious product: **680 kg CO<sub>2</sub>/t cementitious product**.
4. Overall gross specific CO<sub>2</sub> emissions per ton of clinker: **876 kg CO<sub>2</sub>/t clinker**.

#### GOALS AND NEXT STEPS

In 2004, CIMPOR established the goal of reducing overall net specific emissions of CO<sub>2</sub> per ton of cement product by 15% by 2015, taking 1990 as the reference year. We are currently more or less halfway to that target. This goal would, for the perimeter at the time (without the Turkey, China and India Business Areas and without any new production lines that have been built in the meantime in South Africa, Turkey and China), mean obtaining a value of less than 610 kg CO<sub>2</sub>/t of cement product, which will continue to be maintained as a reference despite the change to the "baseline" of 1990 with the addition of new OUs. It should be noted that despite the increase of the installed production capacity of CIMPOR, between 1990 and 2010 cumulative reductions of CO<sub>2</sub> of around 17 million tonnes were recorded, which roughly corresponds to an average annual reduction of 850,000 tons.

Overall net specific emissions of CO<sub>2</sub> per ton of cement product in 2010 were 680 kg CO<sub>2</sub>/t of cement product which, despite representing a slight reverse in relation to the preceding year, advances CIMPOR along the route to reaching the goal set in 2004.

The CIMPOR policy of heavily focusing on producing blended cement of low-carbon content as well as the expected improvement of a range of operating performances associated with the stabilisation of some of the new production lines, should allow the CO<sub>2</sub> specific emissions reduction trend that has been observed in recent years to be maintained.

The consolidated CO<sub>2</sub> emissions of CIMPOR have been checked annually since 2005 by an independent entity. These checks will continue to occur in the future, at least every 2 years in accordance with the commitment made.



CIMPOR has reduced the emissions of each pollutant in recent years, though there may be variations to trends for kilns when individually analysed.

### EMISSIONS II - MONITORING AND REPORTING OTHER EMISSIONS (PARTICLES, NO<sub>x</sub>, SO<sub>2</sub> AND MICRO-POLLUTANTS)

The production of cement emits other types of pollutants into the surrounding environment besides CO<sub>2</sub>, especially in the form of atmospheric emissions, such as the main pollutants particles, NO<sub>x</sub> and SO<sub>2</sub> and other micro-pollutants such as metals.

CIMPOR, aware of the environmental implications of its industrial activity and with the aim of achieving increasingly more demanding values for the emission of pollutants, devotes a significant share of its multi-year industrial investments to the reduction of particle, NO<sub>x</sub> and SO<sub>2</sub> emissions. This has allowed us to achieve the internally set goals which are generally more stringent than the laws applying in each country and to each operational unit.

Hence, five kilns of a total of 34 currently in operation slightly exceeded in 2010 the legal limit for particle emissions and two kilns in the case of NO<sub>x</sub> emissions. New investments are planned to address these very specific situations and achieve 100% compliance with legal values.

Anyway, because of the action taken to control and reduce emissions, other stationary emission sources operated at an average of 60% below dust emission values.

The final values of NO<sub>x</sub> emissions are also on average 22% lower than the respective legal limits and those that relate to SO<sub>2</sub> are on average 65% below the established legal maximum.

#### MONITORING AND REPORTING EMISSIONS OF THE PRINCIPAL POLLUTANTS AND MICRO-POLLUTANTS

According to CIMPOR policy, the monitoring of the key pollutants, particles, NO<sub>x</sub> and SO<sub>2</sub>, is in continuously performed at the main chimney of the kiln, and the correct operation of the analysers, their calibration and maintenance should be guaranteed.

This monitoring allows us to annually evaluate the evolution of emissions from each kiln and make a comparative analysis between countries, geographical areas and overall.

CIMPOR has reduced emissions for each pollutant in recent years, though there may be variations in trends for each kiln when individually analysed.



Consolidated emissions by region show some important differences. For example, the low particle emissions of kilns located in Europe, compared with the highest that are those situated in the Mediterranean Basin and Africa.

The exact opposite occurs with NO<sub>x</sub> emissions, with Europe being the geographical area that contributes most to the high values of these emissions.

The main source of SO<sub>2</sub> emissions is Latin America (Brazil), due to typical pyritic sulphur levels of raw materials, making this geographical area the one that contributes most overall.

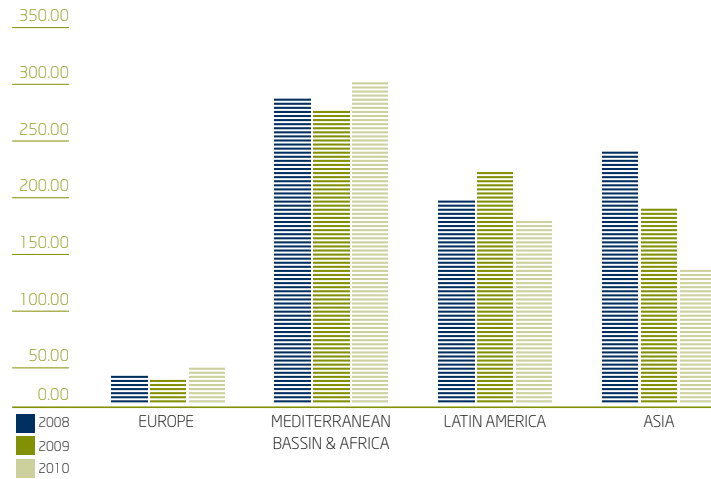
Micro-pollutants, metals, PCDD/Fs and VOCs are measured sporadically in order to describe the situation (fingerprints).

Whenever there are any significant changes to the process, raw materials or fuels, measurements should again be taken of micro-pollutants in order to describe this new situation, according to the principles of the Emissions Monitoring and Reporting Protocol of WBCSD/CSI for the cement sector.

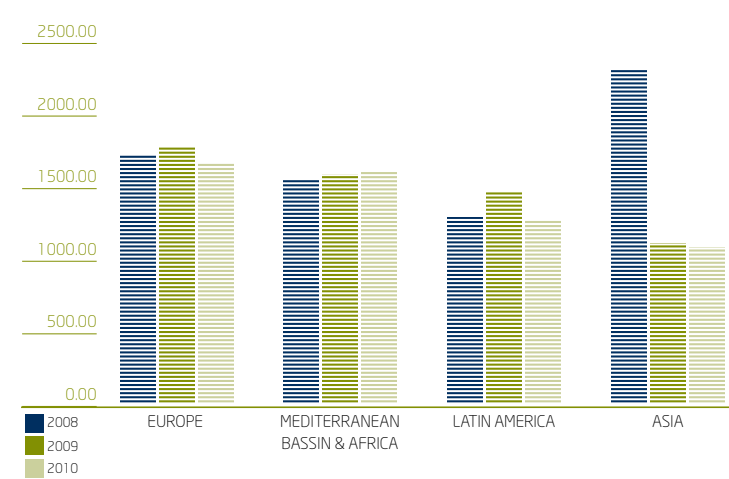


The reporting of the emissions of key pollutants and micro-pollutants from the main chimney of the kiln is carried out according to the internal document "Emissions Monitoring Reporting (EMR)".

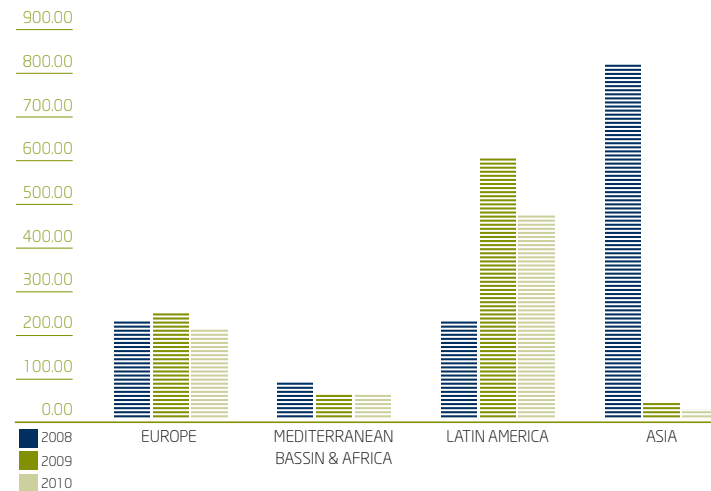
**PARTICLE SPECIFIC EMISSIONS (g/t clinker)**



**NO<sub>x</sub> SPECIFIC EMISSIONS (g/t clinker)**



**SO<sub>2</sub> SPECIFIC EMISSIONS (g/t clinker)**



The reporting of the emissions of key pollutants and micro-pollutants in the main chimney of the kiln is carried out according to the internal document "Emissions Monitoring Reporting (EMR)", which is an internal reference to standardise the measurement, monitoring and reporting of emissions as well as for defining the environmental performance targets of CIMPOR.

It is important to highlight, in relation to the calculation of indicators and validation of compliance with objectives, the fact that each year there are changes to the consolidation perimeter and analysis perimeter of the data, not only due to CIMPOR starting up in new business areas but also the entry into operation of new production lines in countries where it already operates. This often creates difficulties in meeting goals. Nevertheless, the established goals remain unchanged, although the compliance period may be slightly extended.

During 2010 we continued to implement the EMR Manual of CIMPOR through a stronger focus on training, especially among the new OU, as is the case of the China and India Business Areas. In order to make this manual a useful tool that allows more reliable data to be obtained.

95.6% of clinker production is monitored (spot and/or continuous) for the main pollutants (particles, NO<sub>x</sub>, SO<sub>2</sub>) and micro-pollutants (metals, PCDD/Fs and VOCs).



**ENVIRONMENTAL PERFORMANCE CONCERNING POLLUTANT EMISSIONS**

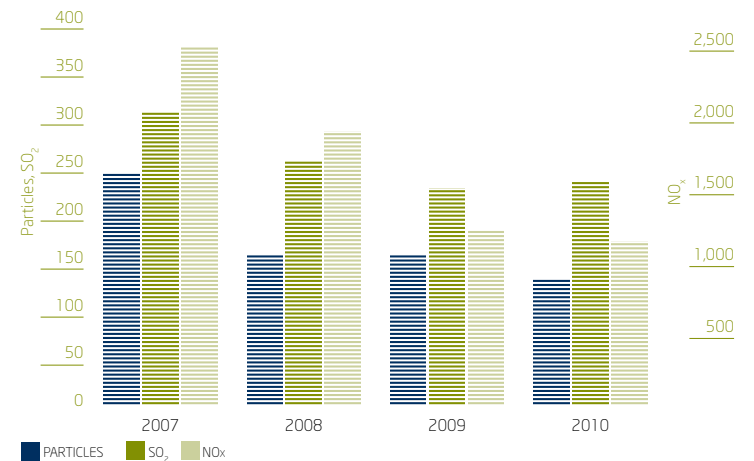
According to the data for 2010, the following values for the performance indicators were obtained in terms of consolidated emissions of CIMPOR:

- **Overall Coverage Rate (KPI1)** It indicates the percentage of clinker produced in kilns where monitoring is carried out (spot and/or continuous) of the main pollutants (particles, NO<sub>x</sub>, SO<sub>2</sub>) and micro-pollutants (metals, PCDD/F and VOCs). This indicator was 95.6% for CIMPOR, in 2010.
- **Coverage Rate Continuous Measurement (KPI2):** It assesses the percentage of clinker produced in kilns where the main pollutants (particles, NO<sub>x</sub> and SO<sub>2</sub>) are continuously monitored. CIMPOR recorded a value of 95.6% for this indicator in 2010.

- **Main Pollutants' Emissions Data (KPI3):** It is an indicator that quantitatively evaluates the emissions of the main pollutants in absolute (t/year) and specific (g/t clinker) units. The following table below shows the development of the figures for the main pollutants (particles, NO<sub>x</sub>, and SO<sub>2</sub>) since 2007:

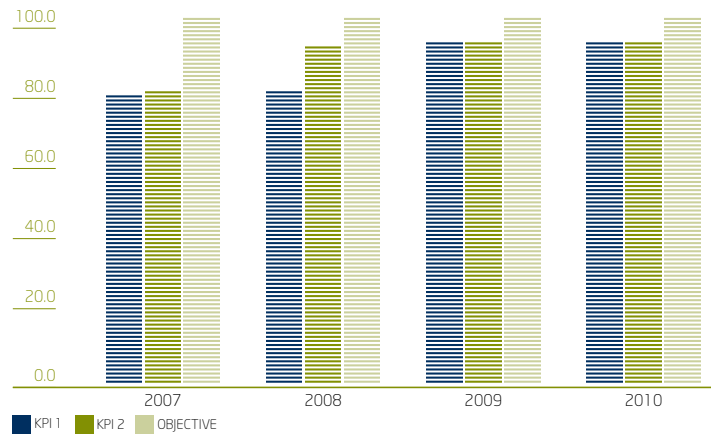
MAIN POLLUTANTS	KPI3a. PARTICLES		KPI3b. NO <sub>x</sub>		KPI3c. SO <sub>2</sub>	
	Absolute units (t/year)	Specific units (g/t clinker)	Absolute units (t/year)	Specific units (g/t clinker)	Absolute units (t/year)	Specific units (g/t clinker)
Year						
2007	4,523.1	243.1	35,808.0	1,924.4	6,991.1	375.7
2008	3,436.6	171.6	33,702.7	1,682.8	6,010.7	300.1
2009	3,242.0	161.6	31,593.0	1,656.9	3,881.8	193.5
2010	3,010.0	144.6	30,314.5	1,523.0	3,792.1	184.4

**EVOLUTION OF KPIS 3a, 3b, 3c (g/t clinker)**



95.6% of clinker production is continuously monitored for the main pollutants (particles, NO<sub>x</sub> and SO<sub>2</sub>).

**EVOLUTION OF 1 and 2 KPIs (%)**



The geographical perimeter and the number of plants analysed has grown substantially since 2004, the year in which the regular reporting of the consolidated emissions of CIMPOR began and when the goals were set. That growth is due to organic growth and the acquisition of companies.

Thus, the first perimeter for the analysis base set in 2004 was 19 OUs and 24 kilns, for which the first goals were established. The consolidation perimeter in 2010 had grown to 26 OUs and 34 kilns.

**Overall Coverage Rate and Coverage Rate Continuous Measurement**

It is CIMPOR policy to respect the goals set for each year, even when new OUs and new production lines are included in the consolidation perimeter.

Accordingly, each new kiln has a maximum period of two years to adopt CIMPOR's internal regulations concerning pollutant monitoring.

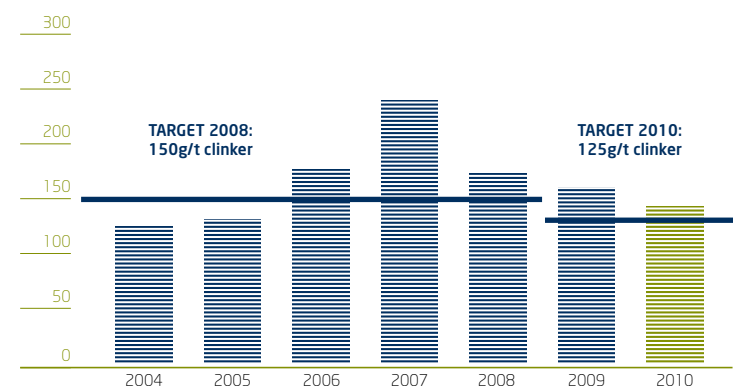
Although an improvement of the KPI1 and KPI2 indicators was observed in 2010, 100% compliance was not possible due to one kiln (India) still not carrying out continuous monitoring of the main pollutants and the fact that the fingerprint to describe micro-pollutant emissions had still not been made.



**Main Pollutant Emissions**

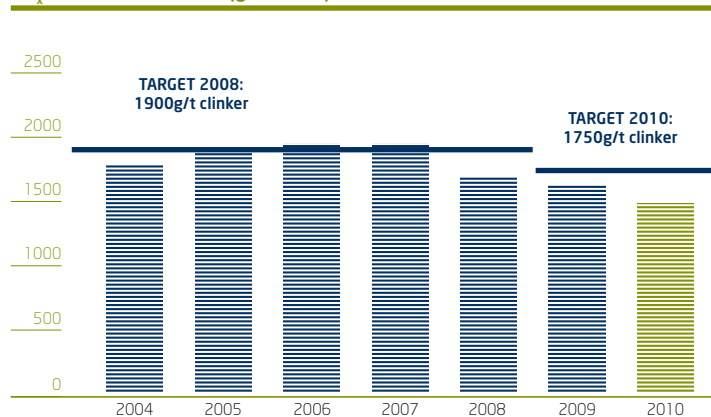
The following goals were defined for specific overall emissions for 2010, with regards to KPI3: 125 g/t of clinker for particles, 1,750 g/t of clinker for NO<sub>x</sub> and 300 g/t of clinker for SO<sub>2</sub>.

**PARTICLE SPECIFIC EMISSIONS (g/t clinker)**



50% of production lines have particle emissions much lower than 100 g/t of clinker.

**NO<sub>x</sub> SPECIFIC EMISSIONS (g/t clinker)**



**SO<sub>2</sub> SPECIFIC EMISSIONS (g/t clinker)**



As can be seen from the previous charts, the emissions of the main pollutants are still evolving favourably. The reduction of overall emissions in 2010 compared to 2009 was 10.5% for particle emissions, 8% for NO<sub>x</sub> and 4.7% in emissions of SO<sub>2</sub>, which confirms the effectiveness of the investments made in recent years to correct and minimize the impact of our activity.

In terms of meeting overall consolidated interim goals, only that for specific emissions of particles has not yet been fulfilled.



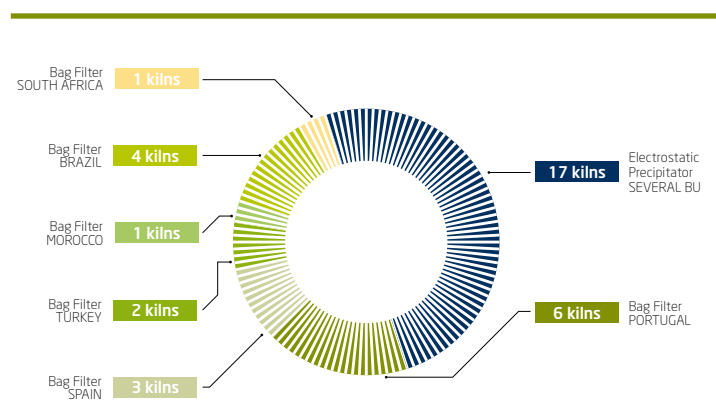
**MAIN POLLUTANTS (PARTICLES, NO<sub>x</sub>, SO<sub>2</sub>) AND MICRO-POLLUTANTS (VOLATILE ORGANIC COMPOUNDS, METALS, DIOXINS AND FURANS)**

**Particles** - The installation of dust removal systems with more advanced technology, including fabric filters, in many of their kilns and coolers, although the coolers have no impact on the emissions levels of the main chimney, have ensured that the emission of particles by the OUs of CIMPOR have been declining consistently in recent years.

50% of production lines currently have specific emissions of particles that are much lower than **100 g/t of clinker**. However, the existence of the

58% of production lines have NO<sub>x</sub> emissions much lower than 1,700 g/t of clinker.

oldest plants, equipped with less efficient dust removal systems (50% of kilns are equipped with electrostatic precipitators) causes the average to rise, standing at **144.6 g/t** of clinker.



17 kilns equipped with electrostatic precipitator: 50%  
17 kilns equipped with bag filter/hybrid filter: 50%

### MONITORING AIR QUALITY

Air quality in the area surrounding the plant is monitored by a range of sampling equipment forming part of the Air Quality Networks of the majority of CIMPOR operating units. This equipment includes online meters intended to continuously monitor emissions from fixed sources, as already referred to, as well as the monitoring of total particle concentrations in the atmosphere by equipment installed all around the plant perimeter.

The data from this network gives important information on the effectiveness and maintenance condition of filters and on the level of diffuse particles in the air, generated internally and externally.

**Nitrogen Compounds (NO<sub>x</sub>)** - The formation of oxygen and nitrogen compounds (NO<sub>x</sub>) is associated with the combustion process, especially combustion conditions and fuel properties. The studies and/or investment under analysis, with the aim of further reducing these emissions, are to be highlighted, particularly those for the plants of southern Spain and Turkey, which are the major contributors to this indicator.

Currently, 58% of our production lines have NO<sub>x</sub> emissions much lower than **1,700 g/t of clinker**. The average is **1,523 g/t of clinker**.

**Sulphur Compounds (SO<sub>2</sub>)** - The emissions mainly originate from the volatilization of the sulphur pyrite in the raw materials and, to a lesser extent, from sulphur present in the fuel.

Currently, 79% of CIMPOR production lines have SO<sub>2</sub> emissions much lower than **280 g/t of clinker**. Nonetheless, and since the Group has plants with reserves of raw materials with quite high sulphur content, the average value is **184.4 g/t of clinker**. If it weren't for those reserves the value would be much lower.

79% of production lines have SO<sub>2</sub> emissions much lower than 280 g/t of clinker.

**MEASURING PROGRESS****EMISSIONS MONITORING AND REPORTING****PERFORMANCE INDICATORS**

The performance indicators (KPI1, KPI2, KPI3a, KPI3b and KPI3c) for the year 2010 are calculated for the geographical perimeter of 26 OUs/ 34 kilns in 2010. Compared to the base perimeter of 2005, a further 6 OUs and 10 kilns have been added. The values of performance indicators relating to 2010 are as follows:

1. Percentage of clinker produced by kilns with an occasional or continuous monitoring system for the main pollutants and micro-pollutants: **KPI 1 = 95,6%**;
2. Percentage of clinker produced in kilns equipped with a continuous monitoring system for main pollutants: **KPI 2 = 95,6%**;
3. Overall total and specific emissions of main pollutants (particles, NO<sub>x</sub> and SO<sub>2</sub>):

	TOTAL EMISSIONS (t/year)	SPECIFIC EMISSIONS (g/t clinker)
KPI 3a. PARTICULES	3010	145
KPI 3b. NO <sub>x</sub>	30315	1523
KPI 3c. SO <sub>2</sub>	3792	184

**GOALS AND NEXT STEPS**

**KPI1:** The goal for KPI1 will be met with the carrying out of spot measurements of metals, PCDD / F and VOCs at the plant in India (Sikka), scheduled for 2011.

**KPI2:** The 100% goal will be achieved with the entry into operation of equipment to continuously measure main pollutants, in India, scheduled for 2011.

**KPI3:** Considering the actions and investments that are planned for the coming year, the reduction goals set for 2010 will remain unchanged for 2011:

**Particles:** 125 g/t clinker;

**NO<sub>x</sub>:** 1,750 g/t clinker;

**SO<sub>2</sub>:** 300 g/t clinker.

With the goal of reducing emissions of main pollutants in the long-term, the following reduction goals are defined for each type of main pollutants by 2015:

**Particles:** 100 g/t clinker;

**NO<sub>x</sub>:** 1,500 g/t clinker;

**SO<sub>2</sub>:** 150 g/t clinker.

The aim of CIMPOR is by the end of 2015 to reduce specific emissions of particles by 38%, emissions of NO<sub>x</sub> by 12%, and SO<sub>2</sub> emission by 48%, against the 2005 baseline. In parallel, 100% of the kilns should have continuous monitoring of the main pollutants and the fingerprints of micro-pollutants must be made.



It is important to seek inspiration in the closed-circuit behaviour of the majority of ecosystems we find in nature, in which there is no concept of waste. The possibility of using alternative raw materials and fuels is, accordingly, of fundamental importance.

## RAW MATERIALS AND FUEL USE

It is crucial, against the backdrop of a growing world population that will reach 9 billion people even before 2050, that industries are able to preserve non-renewable natural resources, becoming increasingly innovative in how to address the aspects of energy use and recovery, reuse and recycling of the by-products currently available, so they can continue to meet the needs of this growing population with ever greater levels of consumption. We just need to go looking for inspiration in the closed-circuit behaviour of the majority of ecosystems found in nature, in which, in general, there is no concept of waste.

### ALTERNATIVE FUELS AND RAW MATERIALS

CIMPOR has been continually seeking new ways to replace fossil fuels and conventional raw materials for alternative ones in the process to produce cement.

We do this for two reasons. Firstly, to reduce the consumption of natural resources needed for the manufacture of our products and, secondly, to reduce the amount of carbon dioxide emitted into the atmosphere.

The unique technical characteristics of our manufacturing process allows the easy reuse of by-products, industrial and municipal waste through co-processing, making our industry a key piece and a natural solution in the waste management process in countries where operate.

As our kilns need to maintain high temperatures for the production of clinker, for manufacturing process reasons, this is the ideal way to safely recover a wide variety of wastes. The kilns of a cement manufacturer offer an environmentally sound and safe alternative to waste disposal solutions at a landfill or waste incinerator. It is also a practice that allows us to reduce our dependence on conventional fossil fuels and their price volatility, avoiding the related emissions that would otherwise be issued at another facility designed to dispose of such waste and, most importantly, allows us to maintain our competitiveness against peer companies.

Along the same lines and in relation to the use of alternative raw materials, the cement manufacturing process requires some raw materials that have an identical chemical composition to that found in many waste and by-products of other industries, allowing us to use those and thus reduce the consumption of natural resources and virgin raw materials.



Hence, in harmony with our sustainability policy, our priority is to reduce the consumption of natural resources and use renewable energy sources.

### ALTERNATIVE RAW MATERIALS

In general, the raw materials commonly used to produce clinker and cement are: limestone, marl, clay, shale, gypsum and natural pozzolana. These are the so-called natural or conventional raw materials, which mostly come from our quarries. Besides these, the so-called alternative raw materials are acquired externally, which have a chemical composition identical to that of the natural raw materials, although they result from industrial manufacturing processes.

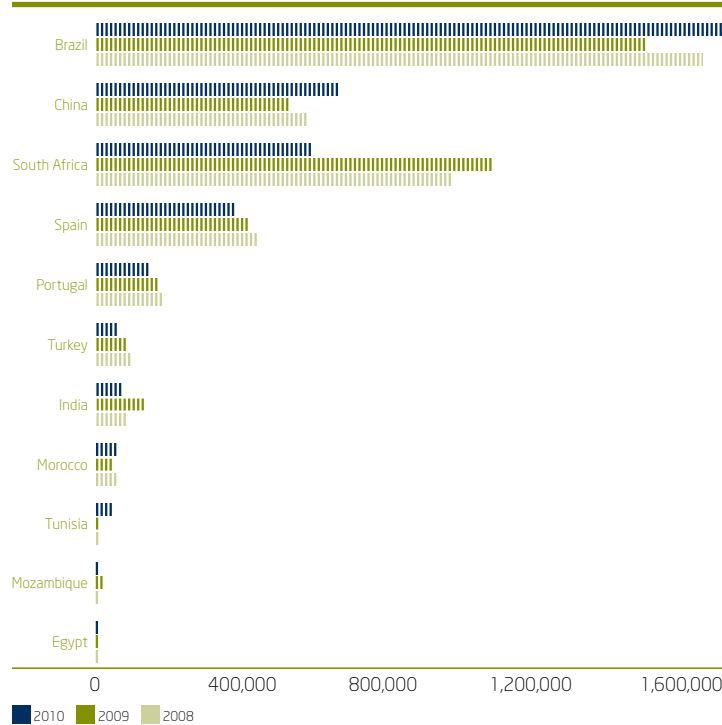
These alternative raw materials can be used in the mix for clinker production, whether as additives during the grinding of cement, or as a replacement for clinker or even gypsum, thus contributing in both cases to the preservation of natural resources.

In 2010, for reasons related to the economic climate and against the previous trend, the rate of use of alternative raw materials in the total amount of 3.55 million tons of raw materials incorporated in our cement and

The use of alternative raw materials in 2010 totalled 3.55 million tons.

clinker products was 8.7% against 9.3% the previous year, which represents a decrease of 5%. The aim is for CIMPOR to exceed 10% by 2015. Only in Brazil, South Africa and China is the use of this type of alternative raw materials exceeding the target set by CIMPOR.

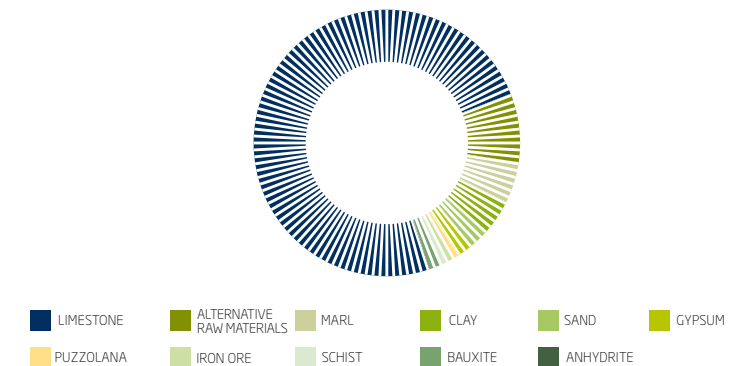
ALTERNATIVE RAW MATERIALS BY BUSINESS AREAS (t)



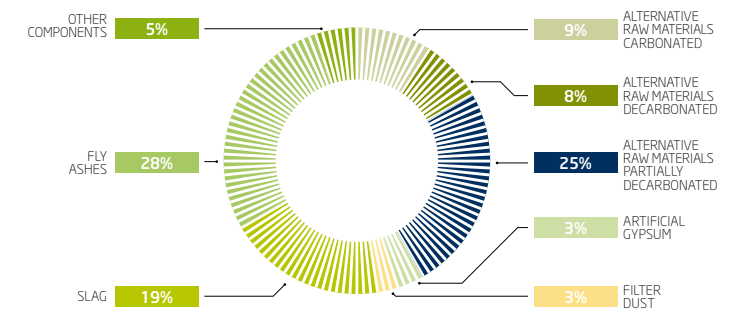
Besides the contribution of these alternative raw materials to reducing the use of natural resources through their use as adjustment agents in the clinker production process or as additives in the manufacture of some types of blended cement, some may also contribute to reducing the direct emissions of CO<sub>2</sub> associated with decarbonation when incorporated in the manufacture

of clinker, provided some of the main components of these alternatives are already in a decarbonated form.. On the other hand, they can also constitute a good alternative in economic terms to conventional raw materials, due to the burden they can be to some industries generating them and also due to the high flexibility of our industry in incorporating them into its manufacturing processes.

BREAKDOWN OF RAW MATERIALS USED IN 2010 (%)  
(Clinker and Cement)



ALTERNATIVE RAW MATERIALS USED IN 2010 (%)





**ALTERNATIVE FUELS**

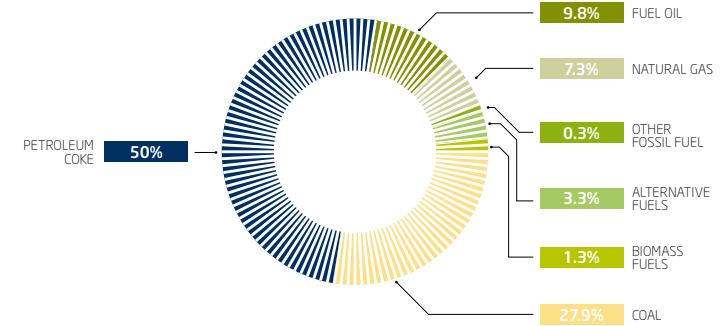
Since the clinker production process is thermal energy intensive, CIMPOR actively works to implement solutions that will reduce thermal energy consumption as well allow the more rational use of non-renewable natural resources by replacing them for alternative fuels.



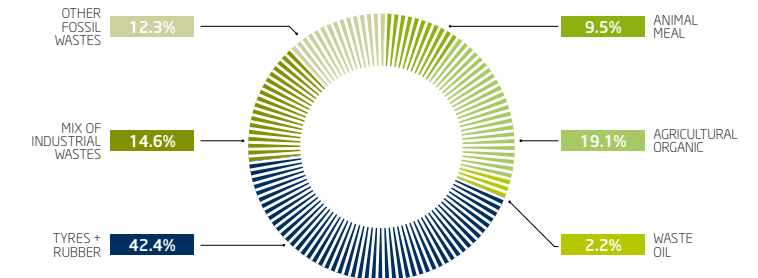
CIMPOR can use in its kilns, besides coal, petroleum coke, fuel oil and natural gas, which are the typical conventional fuels used, alternative fuels through co-processing, exploiting their calorific value.

The types of alternative fuel used in 2010 are shown in the following charts.

**TYPES OF FUEL USED IN 2010 (%)**



**ALTERNATIVE FUELS + BIOMASS USED IN 2010 (%)**



The use of alternative raw materials in CIMPOR is 8.7% and the use of alternative fuels is 4.63%.



#### THE ADVANTAGES OF USING BIOMASS AS AN ALTERNATIVE FUEL

Different types of wastes from household, industrial or agricultural sources can be used as fuel, partially replacing conventional fossil fuels. Biomass is an alternative fuel that can be used as a partial substitute for fuel and thus help reduce CO<sub>2</sub> emissions. According to the Kyoto Protocol, biomass has a CO<sub>2</sub> emission factor equivalent to zero (neutral), because its burning produces water and CO<sub>2</sub>, but the amount of carbon dioxide emitted was previously captured by plants to its growth. In other words, the CO<sub>2</sub> produced is a component of a natural cycle flowing between the atmosphere and plants, and therefore does not represent an overall increase of CO<sub>2</sub> emissions.

More specifically, the energy component of biomass is used in the cement industry as a substitute for fossil fuels, and the inorganic components, such as ash, are integrated into the clinker product.

Although cement kilns can technically use up to 100% of alternative fuels, there are some practical limitations. The physical and chemical properties of most alternative fuels differ significantly from conventional fuels.

While some (such as meat and bone meal) can be easily used by the cement industry, many others can lead to technical difficulties. These difficulties are related to, for example, low calorific value, high moisture content, or high concentration of chlorine or other trace substances. The volatile metals (e.g. cadmium, mercury and thallium) must be carefully managed and the appropriate removal of the dust system of the cement kiln is required. This means that pre-treatment is often necessary to ensure a more uniform composition and improved combustion.

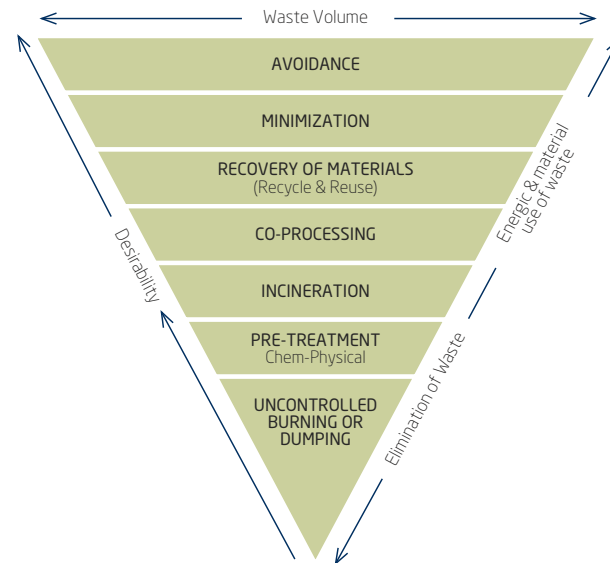
The use of biomass as an alternative fuel also reduces landfill and incinerator use and environmental impact of such facilities, including potential groundwater pollution, methane generation and hazardous ash. It also relieves the pressure placed on limited oil reserves.

Despite a certain shortage of these types of alternative fuels, this route is one of the potential levers available to CIMPOR to reduce CO<sub>2</sub> emissions, in conformity with its climate change policy.

Society has various means at its disposal to manage the waste it generates, according to its physical and chemical nature and also the economic, social and environmental context in which the waste is generated. Thus, specific decisions on the subject can be influenced by local circumstances, such as the

Specific energy consumption in clinker production was 3,635 MJ/t of clinker.

availability of waste processing facilities, the existence of alternative markets for this type of materials, alternative disposal means, as well as the available infrastructures to foster its collection, management and transport.



At CIMPOR, we deem the co-processing of waste at our plants to be an important part of the management policy for waste and by-products from other industries and from society in general, provided that it meets a number of highly demanding conditions and requirements of a legal, environmental, operational and health and safety nature.

Moreover, this operation must comply with the technical specifications for each type of waste, the principles of the "waste management hierarchy", not accepting any specifically prohibited for processing by cement plants, according to internal guidelines as well as those developed under the Cement Sustainability Initiative (CSI) on the responsible use of raw materials and alternative fuels, "Guidelines for the Selection and Use of Fuels and Raw Materials in the Cement Manufacturing Process".



**EMISSIONS AT PLANTS USING ALTERNATIVE FUELS AND RAW MATERIALS**

An analysis of the emissions records of the main chimneys of kilns where co-processing is undertaken and comparing these records with the historical values of each of these production lines before the beginning of that practice, the conclusion is reached that they are completely within the normal range of emission values observed in a situation where conventional fuels are used. This is because the characteristics of the combustion process in clinker and the residences time inside the kilns ensure the complete destruction of the organic part of alternative fuels.

The value of particle emission is solely influenced by the performance of the filtration equipment (fabric and electrostatic filters) on gaseous effluents.

In relation to nitrogen oxides emissions (NO<sub>x</sub>) it must be pointed out that these are inherent to the process since such compounds are associated with combustion, in particular the conditions of combustion. Therefore, they are not influenced by the use of materials or alternative fuels.

The composition of raw materials is decisive in the total organic carbon content of the exhaust gases and therefore must be very well controlled. In addition, the pyritic sulphur content of the raw material is the main source of emissions of sulphur dioxide.

The components of an organic nature, detected as trace gases in gaseous effluents, such as dioxins/furans, are not affected by the type of alternative fuel used. Their concentration in exhaust gases is negligible, as generally shown throughout the cement industry. At CIMPOR, all occasional measurements conducted in the chimneys of our kilns have shown that dioxin/furan emissions are well below the emission limit value of 0.1 ng I-TEQ/Nm<sup>3</sup> established by the European Union.

The presence of metals in cement kiln emissions is due to the fact that they are found in the raw materials and fuels used in the manufacturing process. The content of metals in these system inputs is quite variable, though always at very low levels. The behaviour of metals in the kiln basically depends on their volatility. That is why mercury, an extremely volatile metal, most frequently appears in gas emissions. The input of heavy metals in the system from the use of alternative fuels is not relevant until the rate of replacement of conventional fuel become much higher. Mercury is the main heavy metal which should have very strict limits imposed on its input if we are to ensure adequate control of emissions.

The conversion process that occurs during the clinker production ensures that both the material and energy content of waste is recovered in the kiln. The energy content of the waste is used as the heat of combustion (energy recovery). The ash from the combustion is part of the mineral components necessary for the manufacture of the clinker (material recovery), and therefore integrated into this intermediate product.

Several examples demonstrate that the material and energy content of almost all raw materials and fuel components are recovered in the combustion process. The mineral components of fuels will become part of the clinker minerals and are retained in its matrix. The calorific value of alternative fuel is derived from its organic components.

In conclusion; Whenever we compare the values of spot measurements of emissions in order to evaluate the effect of the use, or not, of alternative raw materials and fuels we reach the conclusion that their use has no effect on the measurement results, despite the frequent criticism the sector faces as regards their harmful effect. It does, in fact, have a positive impact in terms of preserving natural and energy resources, which are the major negative aspects of cement production.

**MEASURING PROGRESS****RESPONSIBLE USE OF RAW MATERIALS AND FUELS****ENERGY USE**

1. Specific energy consumption in clinker production: **3,635 MJ / ton of clinker**.
2. Use of alternative fuels as a percentage of total thermal consumption: **4.63%**.
3. Use of biomass (i.e. quantity of biomass as a percentage of total thermal energy consumption): **1.32%**.

**USE OF RAW MATERIALS**

1. Use of alternative raw materials as a percentage of total consumption of raw materials: **8.7%**.

**NOTE:** This rate is calculated by dividing the total quantity of alternative raw materials, by-products from other industries used as correctives of raw meal for clinker production (e.g. slag, filter ash, pyrite ash and foundry sand used as correctives) and as additives for cement production (e.g. blast-furnace slag, fly ash and synthetic gypsum) by the total quantity of raw materials used, which also includes conventional raw materials (e.g. limestone, marl, schist, clay and sand).

2. Clinker/cement factor calculated in accordance with the WRI/WBCSD CO<sub>2</sub> Protocol (i.e. ratio between clinker used and cement produced): **76.7%**.

**GOALS AND NEXT STEPS**

CIMPOR's main goals in this field are **10%** overall use of alternative raw materials by 2015 and **10%** overall use of alternative fuels (including biomass), by 2015.

**In relation to the use of alternative raw materials, the percentage achieved - 8.7% - was below the 10% goal established for 2010, and this result also reversed the trend from 2008 and 2009, for economic reasons.**

**The overall use of alternative fossil fuels and biomass regressed from the goal during 2010, due to increased activity in several countries that do not use alternative fuels.**


**In terms of the total perimeter of CIMPOR and also the overall use of alternative fuels (alternative fossil fuels and biomass), the figure of 4.63% was achieved, slightly below the 5% goal established for 2010.**

During 2011 CIMPOR will set in motion a new organisational structure for managing Resource Recovery in order to accelerate the increase of the percentage of alternative fuels in the fuel mix currently used. When compared to other cement groups CIMPOR is still at a rather embryonic stage. In any case, the increased production by CIMPOR in countries where the use of alternative fuels is still far behind will prevent significant progress in the thermal replacement percentage in coming years.

A set of 8 Business Areas (Portugal, Spain, Morocco, Brazil, South Africa, Tunisia, Egypt and Turkey), have had a goal defined of 10% use of alternative fuels (alternative fossil fuels and biomass) and 2.5% use of biomass, by 2015.

The values for these eight Business Areas achieved in 2010 were 5.87% (alternative fossil fuels and biomass), and 1.68% for biomass.

The exceeding of these established goals will naturally have a highly positive impact on the CIMPOR total CO<sub>2</sub> emissions.


  
**The environmental rehabilitation of a quarry is an important part of our contribution to the conservation of biodiversity and the protection of existing ecosystems.**

### IMPACTS ON LAND USE

Cement plants are industrial complexes planned for long life cycles, due to their capital-intensive assets, and it is therefore essential that control over sources of raw materials of a dimension suitable to that life cycle is guaranteed. The rational and optimised use of those natural resources is also essential.

Accordingly, the identification of deposits of resources with the required volumes and quality necessary for the manufacture of cement as well as the ability to exploit the available mineral resources in a rational and sustainable manner using practices and extraction means less harmful to the environment, are strategic aspects that are decisive to the success to this industry.

The environmental rehabilitation of a quarry is an important part of our contribution to the conservation of biodiversity and the protection of ecosystems.

The mitigation of impacts over the service life of a quarry and permanent dialogue with the stakeholders of rehabilitation projects in progress or set for the future is therefore of decisive importance.



### EVALUATION AND MINIMISATION OF IMPACT ON LAND USE

In addition to the transformation of the landscape owing to the removal of vegetation and extraction of raw materials, the main impact felt in communities where CIMPOR quarries are located originates from the daily operating activities and has to do with noise spread by air-waves, vibration, dust and road traffic.

As a result, methodologies based on assessment, monitoring and planning of measures to minimise these impacts and monitor them, have been gradually adopted in all quarries.

CIMPOR currently has a preliminary manual with guidelines for the environmental rehabilitation of its mining operations. The final manual will result from the merger of the different laws in each country, the CSI guidelines (\*) and the general lines of company policy for this area, which will provide general implementation guidance for all operational units. In addition to the manual, a database of examples of rehabilitation good practices in CIMPOR and externally is still being created, as well as a programme for diagnosis, monitoring and recording actions that show compliance with the guidelines defined in the manual and in the approved action plan.



These internal guidelines will enable CIMPOR's subsidiaries and their stakeholders to work together in the normal cycle of setting up, developing, operating and closing plants.

CIMPOR has been implementing a series of environmental practices, such as the Environmental and Social Impact Assessments (ESIA) and Environmental/Landscape Rehabilitation Plans (ERPs), in order to help understand and minimise pressure on the physical environment from quarries and surrounding areas.

These studies are specific to each quarry and involve the identification, quantification and mitigation of impacts caused during the lifetime of each quarry and the effective identification of projects for the conversion or rehabilitation of the areas exploited, in order to give them a different future use.

The involvement of local communities in quarry rehabilitation activities and the communication to stakeholders of ERPs are aspects that have been given a high degree of attention within the Group, through the conducting of several information sessions.

**NOTE(\*):** The CSI has developed relatively comprehensive guidelines on factors to be taken into account in Environmental and Social Impact Assessments (ESIAs). Those directives were disseminated among all CIMPOR subsidiaries on their publication.

### OPERATION AND REHABILITATION OF QUARRIES

The impact caused by the operation of a cement plant's quarries is recognised, in terms of public opinion, as one of, if not the most important. This makes combining the activities of operating a quarry with respect for the environment a daily management concern.

The operation of a quarry creates, besides the visual impact, dust, solids, soluble and insoluble material, vibration and noise, with negative consequences on the environment unless the appropriate measures are taken to mitigate those impacts.

Quarries are often visible from a great distance due to their size and the fact that they operate in the open-air, and they are frequently, together with the plants with which they are associated, the main reference mark on the local landscape for a radius of several kilometres.

The number of quarries associated with the Cement Business rose to 70 in 2010 (69 in 2009). The quarry added, operating through the Liyang operating unit, is licensed though not required to have an Environmental

Rehabilitation Plan (ERP). As it is a recent acquisition CIMPOR has not yet started the process of developing the ERP and, accordingly, the percentage of quarries with ERP (77.1%) suffered a slight decline from 2009.

81.5% of the quarries with an ERP (74.1% in 2009) have their plan in execution (see charts). The increasing degree of environmental awareness in CIMPOR should be highlighted, which is expressed through the increase in the number of quarries without an ERP that are developing landscaping practices, promoting greater wealth for the area in which they are located (11% against 6.7% in 2009).

The mineral resources necessary for the Cement Business, such as limestone, clay, shale and sand, among others, often occur in areas of significant ecological value.

The mining sector has a significant impact on biodiversity through the removal of soil in the process of resource exploitation.

This initial action significantly alters previously existing habitats, and even destroys them as the quarry operation advances, by changing the morphology of the terrain and the physical-chemical conditions of the local environment.

Although the mining process is mostly associated with negative impacts on living things, it is important to note that the morphological changes that occur also allow the installation of new species during the quarrying activity and the implementation of landscaping plans for the establishment of new soil conditions at exploited areas has often allowed the establishment of new ecosystems with equal if not greater value in terms of biodiversity (see case study of the Alhandra).

This has been possible by the inclusion of biodiversity plans in the initial phase of the quarry siting project. The intentions is to establish a baseline for soil suitability, the characterization of existing ecosystems, a survey of species present and their monitoring throughout the life cycle of the quarry.

The investment in biodiversity management by CIMPOR and the extraction industry in general also brings important benefits to companies. It provides them with a strong image of social and environmental responsibility, greater acceptance among communities and key partners and makes the implementation of new projects easier, in markets where they operate and also in new markets.



CIMPOR has operating units with quarries that are located in or near areas of known ecological value. These include ecosystems as sensitive as they are valuable, such as the Atlantic Forest, the Mangrove Forest or areas of the Natura 2000 Network.

16 of the 70 quarries assigned to the Cement Business are located in, contain or are adjacent to areas known for their high biodiversity value. There are also situations of areas of known geological worth, with high scientific value. 6 of those 16 quarries (38%) currently have Biodiversity Management Plans (BMPs) implemented, some of which involve members of local populations.

The success of the cement business is related to the ability to rationally exploit and in a sustainable manner the available mineral resources, increasingly using operating means that are more practical and less harmful to the environment.

There follows a synthesis of four key performance indicators used in CIMPOR for evaluating the situation of quarries as regards environmental rehabilitation plans and aspects of biodiversity, which is currently only for the Cement Business but will be extended to other businesses in the future (Concrete & Aggregates):

**KEY PERFORMANCE INDICATORS** 2010 (2009)

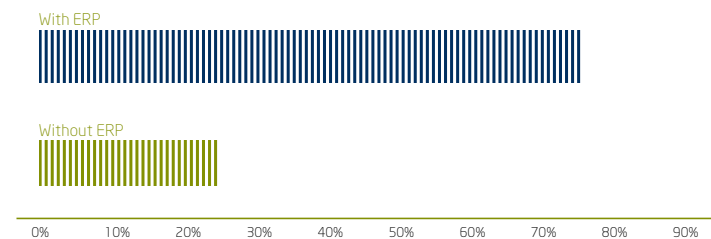
**Environmental Rehabilitation Plans (ERP) for Quarries / Communication of ERPs**

1. Percentage of quarries with Environmental Rehabilitation Plans	77.1% (78.3%)
2. Percentage of quarries with Community Engagement Plans	21% (16%)

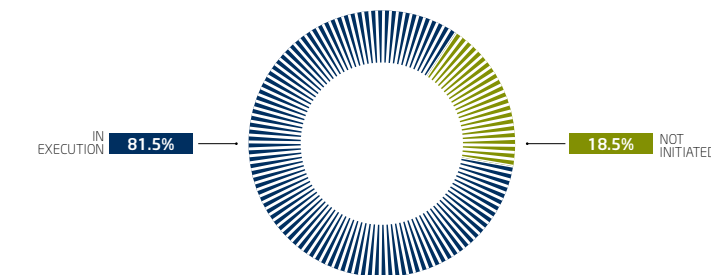
**Biodiversity**

3. Number of active quarries located in whole or in part in areas identified as being of high biodiversity value, or adjacent to such areas. The classification may be made by local, national or international legislation.	16 (11)
4. Percentage of sites (quarries) of high biodiversity value where Biodiversity Management Plans (BMP) are implemented.	37.5% (36%)

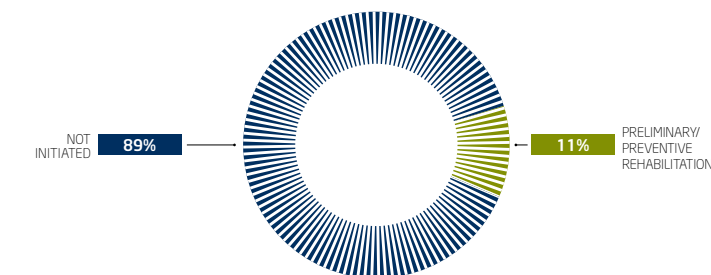
**QUARRIES SITUATION IN TERMS OF ENVIRONMENTAL REHABILITATION PLAN (ERP)**



**QUARRIES WITH ENVIRONMENTAL REHABILITATION PLAN**



**QUARRIES WITHOUT ERP IN TERMS OF RECOVERY/REHABILITATION**





Around 80% of quarries of the Cement Business of CIMPOR possess approved and published Environmental Rehabilitation Plans (ERP), and 81.5% of these are implementing the respective ERP.

#### PROTECTING ECOSYSTEMS AND BIODIVERSITY

The restoration of conditions for the development of ecosystems in areas where mining activity has ceased is an important goal of the CIMPOR environmental and sustainability policy. The company has been developing and implementing a broad set of practices to minimise the pressure on natural habitats:

- The reassessment of mining plans in order to anticipate, whenever possible, the rehabilitation of quarried areas and extend the life of existing quarries (recovery of waste);
- The implementation of a principle of simultaneous operation/recovery to minimise the extension of affected areas;
- The adaptation of the geometry of the operating faces of quarries considering their subsequent rehabilitation;
- Hiring biologists and other experts to study issues related to the protection of ecosystems and biodiversity (e.g., rehabilitation of forest areas and protected areas, conservation of the Mangrove Forests and Atlantic Forests, creation of nurseries for tree seedlings, planting native species, monitoring plant and animal species);
- The implementation of programmes for the identification and elimination of invading species (e.g. the Simuma plant);
- The creation of artificial lakes or ponds to capture rainwater for the irrigation of areas undergoing rehabilitation;
- Mitigating the impact of sudden noise (airborne sound wave) and vibrations caused by blast mining (e.g. surface mining, see noise) on neighbouring communities and the habitat of some animal species;
- Separation and recovery in the aggregates industry of limestone from the quarries of some plants, that has no use for the manufacture of cement, in order to reduce or even eliminate waste piles;
- The use of waste of other industries as a raw material (e.g. the Cajati plant totally uses a by-product from the quarry of a phosphate plant as its main raw material);
- The creation of natural ecosystems
- The monitoring of various types of impacts on water, noise, vibration, biodiversity, among others.

In Portugal, the process of adapting operations at quarries to the new laws on prospecting for and extracting mineral masses was completed in 2004. Some of the extraction terraces that were non-compliant were adapted, species suited to the soil conditions and local climate were planted and the right conditions were created for spontaneous re-colonisation of the land by native species. The idea is to recreate, whenever possible, the plant cover that had previously existed at those locations, in order to attract some of the original fauna existing in the region. This has occurred at a number of locations.

In Spain, the acquisition by the Cordoba operating unit of the new Navaobejo limestone quarry, in Espiel, in 2004 has allowed, among other important aspects, to bring forward the rehabilitation process of the three existing quarries. The operation and recovery of the existing quarries can run simultaneously with that of the new quarry. At Niebla, the systematic recovery of the exploited areas through the modelling of land with tailings, the creation of pastures and the planting of olive trees, keeps the traditional land use for agriculture, with the consequent benefits to the local population.

At the Candiota plant, Brazil, a project with São Paulo University to study new technologies for recovering significant quantities of the high amount of tailings generated during operation of the limestone quarry, continues to be developed.

In South Africa, in addition to preserving the nature reserves adjacent to the Simuma plant (Oribi Conservancy and Idwala), which are rich in animal species (e.g. nyalas, kudus, antelopes, pythons and zebras, etc.) and plant species, great emphasis has been placed on programmes for eradicating invading species.

In Portugal, at the quarry of the Alhandra plant the forestry reorganisation programme of the first reclaimed areas, which involves replacing part of the pioneering tree species for native species, has allowed a gradual increase of biodiversity in these areas over recent years.

## MEASURING PROGRESS

### IMPACTS ON LAND USE

#### LOCAL IMPACTS

1. Active quarries with approved environmental rehabilitation plans (and communicated to local stakeholders) according to CIMPOR guidelines: **77.1%**. 21% of these have plans with a minimum of engagement with communities.
2. Number of active quarries located in whole or in part in areas identified as sensitive or of high biodiversity value, or adjacent to such areas, where the development of a specific programme is required: **16**.
3. Percentage of sites (quarries) of high biodiversity value where Biodiversity Management Plans (BMP) are implemented: **37.5% (6/16)**.

#### GOALS AND NEXT STEPS

CIMPOR set the somewhat ambitious target in 2005 that 80% of the quarries of active operating units (OU) of the cement business would have drawn up environmental rehabilitation plans by the end of 2008 and 100% by the end of 2009, and which would have been communicated to stakeholders and duly implemented (though subject to regular reviews and updates), in accordance with the standards approved by CIMPOR.

The increase in the number of active quarries and a change in the consolidation perimeter of CIMPOR since then, explain the failure of the target in 2008 and again in 2009, although significant progress in this area compared to 2005 has been recorded. Within this context and due to the fact of assigning priority of the development of biodiversity management plans in some BU, the targets were reevaluated in 2010.

In 2009, given the above-stated and the new situation, it was decided to update the goals previously set for the completion of the environmental rehabilitation plans (ERPs) of quarries. It was also decided to start mapping internal initiatives in progress related to biodiversity, develop case studies in this area, identify legislation that may impact on the business and prepare a communication tool for internal and external initiatives related to biodiversity. It was also decided to set goals regarding the drawing up of Biodiversity Management Plans (BMPs), on the land of operating units where this is warranted. This will ensure the conservation of some animal species and protected or classified forest areas (e.g. Atlantic forest, mangrove forests, riparian forest, nature reserves, Euronatura 2000 sites, nature reserves, etc.) on neighbouring land or even land farther away, provided that the CIMPOR Group's companies recognise them as being of possible natural interest and obtaining offsets may be possible.

Accordingly, it was decided to establish a set of new goals in order to reconcile the development of ERPs and BMPs, seeking to identify opportunities for improving biodiversity through rehabilitation processes:

- Percentage of active operating units with approved environmental rehabilitation plans (ERP) for quarries;
- New goal: 90% of quarries with ERP by 2015;
- Percentage of sites (quarries) located in sensitive zones or areas of high biodiversity value in which Biodiversity Management Plans (BMP) are implemented: 65% of quarries by 2015.



About 37% of active quarries of the Cement Business located within or adjacent to sensitive areas or areas of high biodiversity value currently possess a Biodiversity Management Plan (BMP).

## IMPACT ON LOCAL COMMUNITIES

When assessing the impact of our activities, industrial plants and associated quarries, we must take into account not only the positive aspects of job creation, provision of services to the community and the supply of our products, which are essential assets for social and economic development, but also other aspects that can more or less disturb the local community, as is the case of altering landscapes, ecosystems and biodiversity, capacity increases and new projects in existing facilities, increased road traffic in our area of influence, noise and emissions of pollutants.

Mitigating impacts caused by the cement production process is therefore a constant concern of employees at all CIMPOR subsidiaries and at all levels of responsibility. Therefore, CIMPOR anticipates and assesses these impacts, paying special attention to their management and communication. Thus, impacts that could affect the quality of life of surrounding communities are assessed from the beginning of planning an OU and choice of location, through to the acquisition, construction, operation, and finally its closure. The means of minimising those impacts are studied.

Keeping our licence to operate is largely dependent on the capacity of our operating units to be able to win and deserve the support and trust of the local people. This process includes ensuring permanent dialogue with the local community and managing the surrounding communities and environment with the respect they deserve.

### MAIN IMPACTS ASSOCIATED WITH THE CEMENT PRODUCTION PROCESS

A summarised description of the main production phases or stages is presented on the rear of the back cover of this report. Also indicated are some of the major impacts associated with each stage and which have been the object of significant mitigation measures at many of the OUs of the CIMPOR Group, sometimes anticipating specific legislation on the subject.

### LANDSCAPE INTEGRATION AND RECOVERY AND INTERIOR AND EXTERIOR ENVIRONMENTAL REDESIGN OF OPERATING UNITS

Common practice for the better integration of facilities in the surrounding environment is the increase of green spaces and gardens which, besides giving a much nicer internal image to our facilities, contributes to sharply reducing dust emissions by restricting road traffic in these areas and due to the impact of irrigation on those green areas.

Special attention is paid to the correct urban development and planning of the vehicle traffic areas and pedestrian zones as well as signalling and lighting, to improve visibility, vehicle traffic and increase pedestrian safety.

Our facilities are regularly painted in order to improve the internal and external visual impact. The painting is in accordance with special schemes. Building façades are covered with thermo-lacquered sheets, bush/tree screens are planted and plants are set around the perimeter of plants. A few years ago, this approach began to include the design of new architectural contextualisation and painting schemes studied by architects and other experts in this field in order to guarantee the identity of CIMPOR with regard to the colours used.

Likewise, when new operating units are being built, one of the aspects that has deserved special attention during the planning of the best location, the environmental and social impact assessments (ESIAs) and the design is aesthetics and integration into the surroundings in order to mitigate the visual impact as much as possible.

### NOISE

At the time of construction of our premises they were generally located in industrial areas or relatively remote zones. But the growth of populations and cities has made meant that surrounding urban areas have gradually been approaching our doors.

Various initiatives are implemented to prevent or minimise the spread of noise to the surrounding external and internal areas. Those include the establishment of maximum noise levels in the purchase of equipment, the installation of silencers, canopies, natural or artificial acoustic barriers around the perimeter of the plants, insulation of the buildings with the noisiest equipment with acoustic panels, and other practices such as the adoption of maintenance plans with more frequent interventions for noisier equipment.

It is standard practice to map noise in plants and their areas of influence, in order to assess noise levels and verify the effectiveness of the implemented measures. This mapping also indicates zones where the need for action is most urgent.

In relation to the blasting of quarry faces, CIMPOR has been evaluating measures to mitigate the noise. In addition to the already traditional

**INPUTS VS. OUTPUTS**



<b>RAW MATERIALS</b>				
	Natural	Limestone	27,904,822.98	t
		Marl	1,967,855.19	t
		Clay	1,914,542.14	t
	Corrective	Bauxite	38,692.12	t
		Iron ore	263,866.89	t
		Sand	600,002.93	t
		Schist	198,180.90	t
	Alternative carbonated		297,887.65	t
	Alternative decarbonated		272,024.75	t
	Alternative partially decarbonated		888,696.33	t
<b>ENERGY</b>				
	Electricity:		2,932,351	MWh
	Conventional fossil fuels			
	Pet coke		1,179,449.75	t
	Coal		639,983.09	t
	Fuel Oil		191,378.16	t
	Diesel		867.56	t
	Natural Gas		156,761.13	t
	Other fossil fuels		9,651.51	t
	Alternative fuels			
	Industrial Waste		155,659.71	t
	Biomass		70,444.53	t
<b>WATER</b>				
			6,164,022.71	t
			0.285	m <sup>3</sup> / t clinker
<b>CEMENT ADDITIVES</b>				
	Gypsum		514,986.71	t
	Anhydrite		118.00	t
	Artf Gypsum		108,424.16	t
	Limestone		2,665,551.04	t
	Filter Dust	(generated by OU)	119,475.93	t
	Slag		684,494.73	t
	Fly Ashes		1,001,380.00	t
	Puzzolana		308,568.00	t
	Other Components		178,156.28	t
<b>SPECIFIC ELECTRICITY</b>				
			110.6	kWh/t cement
<b>PRODUCTS</b>				
	Clinker		21,616,050	t
	Cement		26,690,014	t
	(Clinker incorporated)		20,505,499	t
<b>ATMOSPHERIC EMISSIONS</b>				
	CO <sub>2</sub>		18,944,884	t
	NO <sub>x</sub>		30,314.5	t
	SO <sub>2</sub>		3,792.1	t
	Particles		3,010.0	t
<b>LANDFILL DISPOSAL</b>				
	Bypass Dust		407,124.19	t

We pay particular attention to landscape integration and recovery and the interior and exterior environmental redesign of the operating units, noise, airborne dust, air quality, water and waste management, access routes, transport and the safety of the products we manufacture.



blasting systems based on “micro-delay” detonators, intended to mitigate the vibration and noise resulting from raw material blasting, an alternative to explosives is being used with some success, which involves the mechanical removal of raw material at limestone quarry faces using a continuous surface miner.

#### AIRBORNE DUST

Airborne dust, often referred to as “fugitive dust”, is primarily generated and released during the handling (loading and unloading), transfer, transport, storage and extraction of raw materials, clinker and cement throughout the manufacturing process (see the manufacturing process diagram).

We have been implementing action plans at all our operating units in order to mitigate this problem. They include covering conveyors, improving dust removal at material transfer points, sealing several raw material and clinker storage buildings and, whenever possible, eliminating open-air storage areas for raw materials, clinker and solid fuel. In the latter case, open-air storage has been gradually replaced by the construction of silos and closed storage buildings specifically for that purpose and equipped with systems for the automatic handling of materials and efficient dust collection systems. We also have installed automatically closing gates at discharge points for clinker, raw materials, solid fuels and other intermediate and final products. Where the immediate elimination of open-air storage areas has not yet been possible, we have deployed, with great success, atomized water spray systems, which harness duly treated rain water that is sprayed on material stockpiles.

The replacement of dirt roads and zones with newly constructed internal and external concrete roads and the creation of a number of green zones have decisively contributed to solving this problem.

#### WATER

CIMPOR, while not a major consumer of industrial water, is aware that access to water is a basic need of the population. It promotes, in the countries where it operates, the rational use of water and tries to contribute through example to the establishment of high standards in water use, defining strategies that cover the treatment, recycling and reuse of water and raising awareness to more efficient water use.

The environmental impact associated with the use of water by a cement plant is relatively low, especially in more modern units where water circulation

CIMPOR promotes, in the countries where it operates, the rational use of water and tries to contribute through example to the establishment of high standards in water use, defining strategies that cover the treatment, recycling and reuse of water and raising awareness to more efficient water use.

occurs in a closed circuit and the better use of rainwater for some areas of industrial and domestic consumption and other typical uses is sought.

Water for non-industrial use accounts for about 75 to 90% of total water consumed. It is primarily used in oil cooling circuits for the mechanical components of equipment, the irrigation systems of the satellite coolers of kilns in gas conditioning towers and for the preparation of raw materials (pulp) at plants using the wet process. The water in the conditioning towers or that present in the raw material is evaporated during the manufacturing process without resulting in liquid effluents.

Water is used, besides the above-mentioned industrial uses, for domestic purposes and the irrigation of green spaces, garden areas and watering vehicle tracks in quarries, as well as in other automatic sprinkler systems designed to minimise airborne dust emissions.

The water used in the operational units for industrial purposes is generally obtained from the plant's own abstraction of groundwater and/or surface water. It is subject to the appropriate prior treatment.

The water for domestic use comes from the public urban water supply, if such exists.

Water for other uses is water that has nothing to do with industrial or household uses, such as water for the irrigation of green areas, quarry rehabilitation zones and the spraying of roads to control airborne dust. Nowadays, in many of the countries where we operate, this water comes from the collection and reuse of rainwater using networks created for this purpose in many of our OUs.

Almost all plants, in harmony with a policy of preservation and rational management of water and to minimise the quantities of water abstracted, have closed circuit water systems which foster water reuse, thus substantially reducing the impact of liquid effluents from processes.

Many of our OUs have their own purification lines for urban waste water. The same is largely the case with water runoff, which is collected in holding tanks to decrease the load of suspended solids that such water normally carries. Likewise, in order to preserve water quality and prevent its contamination, especially in the raw materials, solid fuels and waste areas, most of the OUs have installed wastewater systems and treatment stations (e.g. lubricant separators, decanting chambers and holding tanks) prior to discharge in the environment or its reuse.



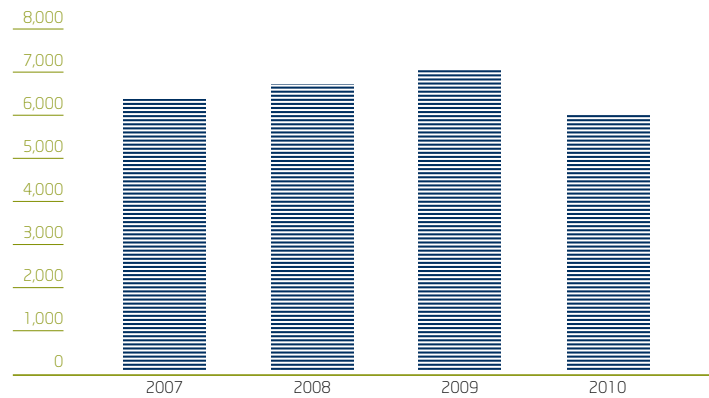
The quality of discharged water is generally subject to local laws, requiring different sampling and evaluation frequencies of specific parameters at each plant.

Each OU must annually report on, besides water quality, water consumption, which is currently measured and controlled in a systematic and reliable manner in the majority of CIMPOR OUs.

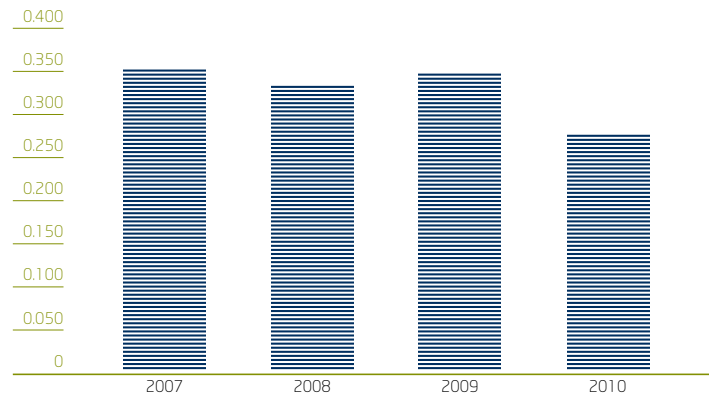
Under the Cement Sustainable Initiative (CSI), CIMPOR is working with the other member companies towards establishing a protocol by 2012 designed to make the reporting of water consumption, define the percentage of industrial activity carried out in areas of water stress and develop a guide to assess the risks and design action plans in locations deemed to be critical.

The total specific consumption of industrial and domestic water by CIMPOR in 2010 was 0.285 m<sup>3</sup>/t of clinker which is almost a 18% decrease on the previous year.

**TOTAL WATER CONSUMPTION (Kt)**



**WATER SPECIFIC CONSUMPTION (m<sup>3</sup>/t clinker)**



**WASTE**

CIMPOR policy on this matter includes criteria for minimising the generation of waste and the adoption of procedures for the selective collection of waste generated by the OUs.


The end management of waste is performed by authorised entities with which we try to find the best end solution for wastes (e.g. reuse, recycling, or recovery), following the line of treatment most appropriate to their composition and legislation, and always seeking, whenever possible, to prevent disposal at landfill.

The waste from industrial activity includes wood pallets, used oils and refractories, scrap, conveyors, electrical cables, among others, resulting from maintenance, lubrication and dismantling of equipment.

With regard to the administrative areas, it is mostly waste not very significant in terms of quantity, such as paper, miscellaneous office equipment, packaging, paper bags and plastic bags.

The quantity of waste generated by our plants has been falling in recent years.




  
**The quantity of waste generated by our plants has been falling in recent years.**

The plants have covered and waterproofed areas with restricted access for the storage of waste, so that they can be stored until removal by authorised agents. We also have recycling bins for the selective disposal of different types of waste.

Most of our OU currently have Environmental Management Systems certified according to international reference standards, which facilitates the waste management process and compliance with legislation.

A large part of the waste generated throughout our manufacturing process can be re-introduced at various points in the process, which means that we do not, unlike other industries, produce significant quantities of waste to be treated externally.

#### **TRANSPORT**

We aim to combine the best attributes of road transport with rail transport and also sea transport, for long distances.

In relation to transport by road, which is the form of transport with the greatest impact on the communities surrounding our OUs, we seek to create special road routes that prevent the movement of large vehicles through the centre of local towns, thus minimising traffic congestion, noise, pollutant emissions from exhausts and airborne dust. We also seek not to interfere in road safety, particularly in rural areas. This is an area that is often the subject of analysis and discussion with neighbouring communities. In many cases, we have been able to create alternative transport routes and preventive measures to limit the disturbances caused by road transport and keep the risk of road accidents at very low levels.

#### **SAFETY OF THE PRODUCTS WE MANUFACTURE - EUROPEAN THEATRE**

Various European directives have come into force in recent years aimed at controlling the maximum quantities of certain substances present in cement, with the goal of minimising allergies, infections, irritations and other risks that may result from handling the product.

Hence, the focus has shifted from adapting harmonized standards relative to the specification and conformity criteria of cement to restrictions on the use of cements and its preparations, in order to comply with the regulated limit for the content of water soluble Cr (VI). Our product also has to undergo

registration, evaluation and authorisation, as a result of the establishment of the REACH directive, currently in force.

In the last few years we have been performing thorough checks of cement, through continuous monitoring of its quality and its components. We make a monthly check of each and every one of the specifications that must be complied with.

These criteria are essential to maintaining the standardisation mark/seal of the cement, thus ensuring that they can be distributed in any country in Europe.

Other requirements to be met when supplying the product are: i) the registration of the Safety Datasheet, which include exposure scenarios that detail the conditions to ensure the safe use of our product, ii) compliance with specifications at the time of shipment, both bulk cement and bagged cement, concerning the systematic monitoring of trucks weights, and the prior check by the transport company of the compatibilities and incompatibilities of the goods transported, iii) the correct labelling of bags and the controlled weight of each one.



## MEASURING PROGRESS

### IMPACTS ON LOCAL COMMUNITIES

#### LOCAL IMPACTS

Overall specific water consumption: **0.285 m<sup>3</sup>/t of clinker**. In recent years, since it started regularly measuring water consumption at all OUs and taking measures to raise awareness to that effect, consumption has been gradually falling.

Water consumption for industrial and domestic purposes is monitored in operating units and their quarries, whether the water originates from own subterranean and/or surface water sources or the mains water supply. Groundwater levels at the quarries are also monitored.

#### OBJECTIVOS E PRÓXIMOS PASSOS

##### Monitoring Water Consumption

CIMPOR has been methodically improving its systems for monitoring and gathering information on water use and consumption so that this data can be regularly reported.

Monitoring of water consumption for industrial and domestic purposes is carried out at all operational units and their quarries, though with differing reliabilities, whether the water originates from own subterranean and/or surface water sources or the mains water supply. Groundwater levels at all quarries are also monitored.

The target of a minimum annual reduction of 5% of water consumption was a goal set four years ago, in order to achieve a value lower than 0.300 m<sup>3</sup>/t by 2015. That target was achieved in 2010. Until a new overall goal is set, we will continue to keep an annual reduction of 5% as a reference for the near future. We will continue to implement initiatives aimed at reducing the current value of specific water consumption per ton of clinker, through the adoption of a set of preservation measures, such as the installation of flowmeters at all water abstraction sources, raising the awareness of workers, improving the sprinkler systems in conditioning towers, continue with the redesign of some of the industrial water networks, optimisation and time control of irrigation systems at quarries and the better use of rainwater for industrial purposes. We also produced water balance sheets for each of our OUs in order to obtain more detailed and auditable data on consumption.

##### Monitoring Other Impacts

CIMPOR plans to develop new scorecards during the next two years to measure other impacts related to the activity of the respective OU.



Management excellence and improved operational performance includes strict principles of corporate governance as well as the adoption of robust and auditable management systems that can be certified according to internationally accepted standards.

## INTERNAL MANAGEMENT SYSTEMS AND OTHER TOOLS

Management excellence and improved operational performance includes strict principles of corporate governance as well as the adoption of robust and auditable management systems that can be certified according to internationally accepted standards.

We have consistently focused on the excellence of our internal management systems as a way of creating a shared vision of the business, improving the quality of information and internal communication, conducting internal benchmarking and facilitating the process of decision support. Accordingly, the expansion of the Information Systems to new Business Areas/OU has continued.

Furthermore, the separate or integrated implementation of Quality, Environmental and Occupational Health and Safety Management Systems at the operational units, as well as their certification according to international reference standards, is a decision that has proven to be an important driving force in implementing some of the principles of our sustainability policy.



### INTERNAL MANAGEMENT SYSTEMS

In the field of Information Systems we have a strategy of standardising the solutions adopted by different companies of CIMPOR, the most notable of which is the continuation of the project for the complete installation of the SAP ERP solution in the new Business Areas/OU.

The process of implementing a new Industrial Statistics system in the OU has also been concluded and a database that automatically generates benchmarking reports from CIMPOR OU is in operation.

The adoption of these strategic management systems has helped improve company performance. These systems help create open communication between all business posts, improve the involvement of different Business Areas/OU and departments and, therefore, obtain the contribution of all to achieve our strategic objectives.

### QUALITY (QMS), ENVIRONMENTAL (EMS) AND OCCUPATIONAL HEALTH & SAFETY (OH&SMS) MANAGEMENT SYSTEMS

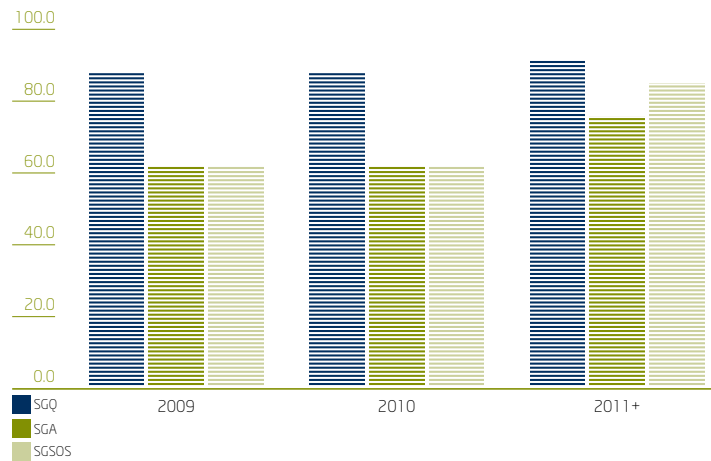
Although operational, environmental, occupational health and safety, and quality management remain decentralised in CIMPOR, corporate rules and guidelines have been adopted to quickly develop a common language and practices.

**MANAGEMENT SYSTEMS**

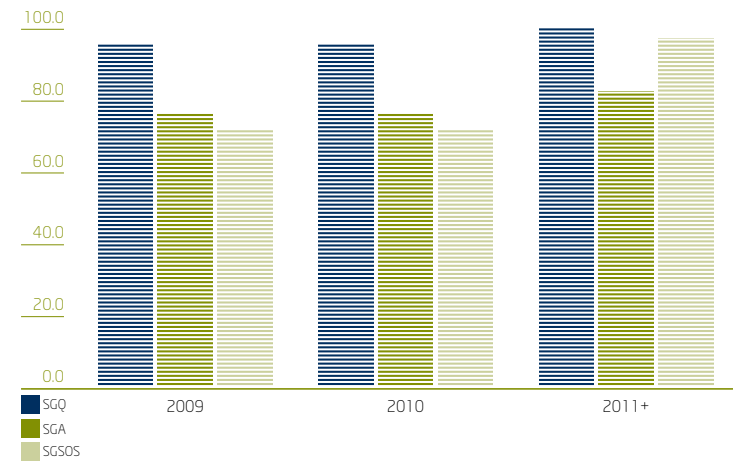
	Quality	Environmental	Occupational Health and Safety
<b>Certifications 2010</b>	In 2010, 35 of the 40 operating units of CIMPOR have quality management systems, meeting the requirements of the ISO 9001 standard.  88%	26 of our 40 operating units keep the certification of their environmental management systems according to the international ISO 14001 standard.  65%	26 of our 40 operating units have achieved certification of their OHS management systems according to the international OHSAS 18001 standard.  65%
<b>Pending certification</b>	Only 2 operating units of the Mozambique BA, and 2 operating units of the China BA	3 operating units of the Mozambique BA, 4 operating units of the China BA, 6 operating units of Turkey and 1 operating unit of Portugal (*)	3 operating units of the Mozambique BA, 4 operating units of the China BA, 5 operating units of Spain (**), 1 operating unit of Portugal (*) and 1 operating unit of Morocco.
<b>Outlook 2011</b>	90%	73%	85%

**Note:** (\*) - This OU was closed in 2010. (\*\*) - Two of these OU were closed in 2010.

**CERTIFICATION OF CEMENT PLANTS AND GRINDING STATIONS (%)**

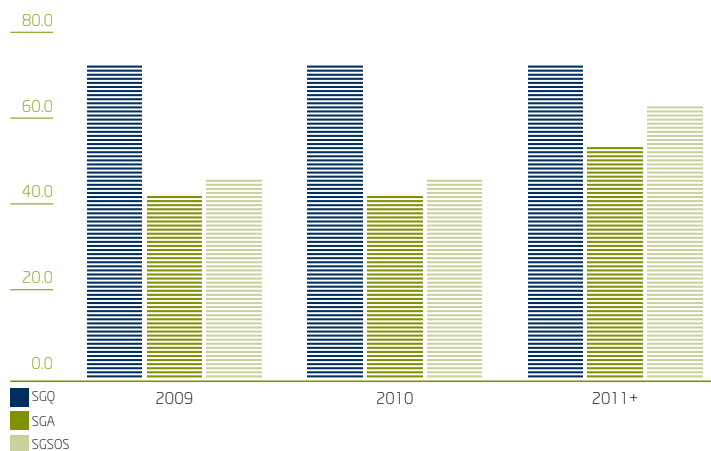


**CEMENT PLANT'S CERTIFICATION (%)**



Currently, 35 of CIMPOR's 40 (88%) OU hold ISO 9001 certification, 26 (65%) hold ISO 14001 certification and 26 (65%) hold OHSAS 18001 certification, or equivalent.

**GRINDING STATION'S CERTIFICATION (%)**



Some of Business Areas of CIMPOR have evolved to Integrated Management Systems (IMS) for quality, environment and occupational health and safety. This approach provides the possibility of obtaining synergies that standardise the culture among units acquired at different times, simplifying the management system, reducing the volume of documentation and the quantity of system audits and, therefore, reducing overall system costs.

**OTHER TECHNICAL AND MANAGEMENT TOOLS**

CIMPOR, besides the concern with the management systems' certification and the implementation of the other referred systems, has continued to develop, implement and improve a vast range of other technical and management tools aimed at standardising a range of internal practices and processes in order to create a common technical and management language.

Selected, and ever more detailed, parameters have been integrated into the CIMPOR management systems. Indicators and industrial performance in a wide range of areas measured against defined goals, are included in annual reports and monthly corporate flash reports for the executive committees

of the BU and the OU. Those indicators and reports are intended for the preparation of business plans and investment decisions.

Some of the tools most used besides the traditional tools of financial reporting are listed below:

- CIMPOR Performance Programme and respective reporting and analysis corporate tools (technical performances and industrial costs) compared to the goals;
- CIMPOR Sustainability Programme and respective Corporate Reporting Instructions (Sustainability Report) and progress reports and analysis of performances against goals;
- CO<sub>2</sub> Emissions Protocol (standard for monitoring and reporting CIMPOR's CO<sub>2</sub> emissions);
- Emissions Monitoring and Reporting Protocol (standard for monitoring and reporting the Group's other emissions) and EMR (Emissions Monitoring and Reporting) Manual;
- Code of conduct for the use of alternative fuels and raw materials (Guidelines on responsible use of raw materials and fuels in cement kilns);
- Environmental and Social Impact Assessment (ESIA) directives;
- Stakeholders Engagement Scorecard;
- Training Programme for Specialist Staff/Seminars.

[READ HERE THE CASE STUDIES \(PAGES 140 TO 151\)](#)

## MEASURING PROGRESS

### INTERNAL MANAGEMENT SYSTEMS AND OTHER TOOLS

#### MANAGEMENT SYSTEMS

1. Percentage of operational units with quality management systems (QMS) with ISO 9001: 2008 certification: 88%. Goal set in 2004: 100% by 2008.
2. Percentage of operating units with environmental management systems (EMS) with ISO 14001: 2004 certification: 65%. Goal set in 2004: 100% by 2009.
3. Percentage of operating units with occupational health and safety management systems, with OHSAS 18000: 1999 certification or equivalent: 65%. Goal set in 2004: 100% by 2010.

#### GOALS AND NEXT STEPS

CIMPOR will continue to annually report on its performance in relation to a wide range of sustainability indicators as well as the respective progress goals and the improvement of those reporting systems.

At the same time, the process of certification of the management systems will continue in order to achieve certification for all the management system. Certification has been delayed in respect of the phased goal set in 2004 (to have all QMS certified by 2008, all EMS certified by 2009 and all OHSMS certified by 2010). The addition of new recently acquired operational units to the perimeter has meant the delay in several cases of achievement of the targets set.

CIMPOR, under its Cement Sustainability Initiative commitments, will continue to improve the degree of implementation of the various guidelines that have been jointly developed, integrating them into its policies and internal processes.

The verification of a growing number of report indicators is one of the aspects to be taken into account in the future.

CIMPOR intends to extend in the near future the process of verifying the consolidated CO<sub>2</sub> emissions and the consolidated OHS data to all the data contained in the Sustainability Report.





## OUR PLAN FOR A BRIGHTER FUTURE

The goals we have achieved show us that we are on the right path. We have established new goals to be achieved, more ambitious and demanding goals. An effort that is going to be reflected at internal level, through reinforcement of competences, and externally, by continuously intensifying our relationships with our stakeholders. This is our commitment to the future.

**CIMPOR. Our soundness is in your life.**



PROGRESS

## CIMPOR'S SUSTAINABILITY PERFORMANCE DATA

KEY PERFORMANCE INDICATORS	KPI	GRI	PAGE	2009	2010
<b>ECONOMIC PERFORMANCE</b>					
<b>ECONOMIC VALUE GENERATED AND DISTRIBUTED (million euros)</b>					
Turnover	x	EC1	AR 46	2,085.5	2,239.4
Operating Cash Costs (million euros)	x	EC1	AR 46	1,479.6	1,609.6
Operating Cash Flow (EBITDA) (million euros)	x	EC1	AR 46	605.9	629.8
Depreciation and Provisions	x	EC1	AR 46	229.00	220.70
<b>Value creation for CIMPOR and key stakeholders (million euros):</b>					
Benefit to employees (salaries)		EC1/EC3	AR 171 - 176 SR 20 - 21	244	253
Benefit to state (taxes)		EC1	SR 20 - 21	63	71
Benefit to shareholders (dividends including minorities)		EC1	SR 20 - 21	121	129
Benefit to creditors (interests to banks)		EC1	SR 20 - 21	76	51
Benefit to suppliers (goods, services and materials purchased)		EC1	SR 20 - 21	1530	1773
Benefit to others		EC1	SR 20 - 21	77	16
Retained in business		EC1	SR 20 - 21	407	316
<b>SALES</b>					
Sales of clinker and cement (million tonnes)	x		AR 41	27,402	28,269
Sales of aggregates (million tonnes)	x		AR 41	13,819	12,756
Sales of concrete (million m <sup>3</sup> )	x		AR 41	7,264	6,721
Sales of dry mortars (million m <sup>3</sup> )	x		AR 41	543	474
<b>IMPACT OF INFRASTRUCTURE INVESTMENTS</b>					
Development and impacts of infrastructure investment provided for public benefit		EC8	SR	SR 2009	SR 2010
significant indirect economic impacts		EC9	SR	SR 2009	SR 2010
<b>NOTE:</b> More economic information can be found on Annual Report 2010					
<b>LOW-CARBON INTENSITY CEMENTS</b>					
% of cement products containing mineral components (blended cements)	x	EN2	In this table	69	70
<b>CEMENT TYPES PRODUCED BY CIMPOR</b>					
Ordinary Portland Cement (%)			In this table	31	30
Slag cement (%)			In this table	4	4



KEY PERFORMANCE INDICATORS	KPI	GRI	PAGE	2009	2010
Pozzolana cement (%)			In this table	4	4
Fly ash cement (%)			In this table	10	9
Limestone cement (%)			In this table	42	43
Blended cement with multiple mineral components (%)			In this table	8	10
Masonry cement, oilwell cement, lime and others (%)			In this table	1	1
<b>CUSTOMER RELATIONS</b>					
% of CIMPOR affiliate companies conducting at least one type of customer survey	x	PR5	SR 97 / 99	88.0	88.0
% of those surveyed measuring customer satisfaction (inquiries)	x	PR5	In this table	100.0	100.0
% of those surveyed evaluating customer expectations (face-to-face meetings)	x		In this table	54.5	54.5
<b>ENVIRONMENTAL PERFORMANCE</b>					
<b>NUMBERS OF PLANTS INCLUDED IN PERIMETER OF ANALYSIS</b>					
Cement plants and grinding stations	x		SR 17 / 99	40	40
Ready-mix plants				excluded	excluded
Aggregates				excluded	excluded
Dry mortars				excluded	excluded
<b>MANAGEMENT SYSTEMS</b>					
<b>Implementation of ISO 14001 (% of operating units)</b>					
Cement plants (%)	x		SR 97 / 99	77.0	77.0
Grinding stations (%)	x		SR 97 / 99	50.0	43.0
Total plants (cement plants + grinding stations) (%)	x		SR 97 / 99	68.0	65.0
<b>SUSTAINABILITY INVESTMENT (INCLUDES ENVIRONMENTAL AND ENVIRONMENTAL COMPLIANCE)</b>					
Sustainability / Environmental investment (€ million)		EN30	SR 58	45.4	36.7
<b>REDUCING CO<sub>2</sub> EMISSIONS</b>					
Absolute gross CO <sub>2</sub> emissions (million tonnes/per year)	x		SR 18 / 62 / 63	17.7	18.9
Absolute net CO <sub>2</sub> emissions (million tonnes/per year)	x		In this table	17.7	18.9
Specific gross CO <sub>2</sub> emissions (kg CO <sub>2</sub> /t cementitious material)	x	EN16	SR 18 / 62 / 63 / 69	677	681
Specific net CO <sub>2</sub> emissions (kg CO <sub>2</sub> /t cementitious material)	x		In this table	677	681
Specific gross CO <sub>2</sub> emissions (kg CO <sub>2</sub> /t clinker)	x		SR 18 / 63 / 69	870	876
Specific net CO <sub>2</sub> emissions (kg CO <sub>2</sub> /t clinker)	x		In this table	870	876
CO <sub>2</sub> cumulated emissions avoided until current year (million t CO <sub>2</sub> )	x	EN18	SR 63 / 69	15.7	16.9
CO <sub>2</sub> annual emissions avoided average (thousand t CO <sub>2</sub> /year)	x		In this table	827.3	847.5

KEY PERFORMANCE INDICATORS	KPI	GRI	PAGE	2009	2010
Indirect CO <sub>2</sub> from purchased power (million tonnes)	x	EN4	In this table	1.29	1.28
<b>Other Non-CO<sub>2</sub> Greenhouse gases</b>					
Other direct and indirect greenhouse gases		EN17	SR	See note 1	See note 1
<b>ENERGY</b>					
Thermal energy mix of clinker production (%):		EN3			
Coal	x		SR 65 / 79	25.5	27.9
Petcoke			SR 65 / 79	50.5	50.0
Heavy fuel			SR 65 / 79	11.4	9.8
Natural gas		EN3	SR 65 / 79	7.7	7.3
Shale and lignite			SR 65 / 79	0.4	0.2
Alternative fossil fuels	x		SR 65 / 66 / 79 / 83	3.1	3.3
Alternative biomass fuels	x		SR 18 / 65 / 66 / 79 / 83	1.5	1.3
Thermal energy efficiency (MJ/tonne clinker)	x		SR 18 / 66 / 83	3,565	3,635
Thermal substitution rate (% thermal energy from alternative fuels)	x	EN5	SR 18 / 65	4.57	4.63
Waste types used as alternative fuels (%):					
Waste oil			In this table	0.00	0.10
Tires			In this table	2.29	1.96
Plastic			In this table	0.00	0.00
Solvents			In this table	0.00	0.00
Impregnated sawdust		EN3/EN5	In this table	0.00	0.00
Industrial waste and other fossil-based wastes			In this table	0.49	0.67
Animal meal and animal fat			In this table	0.50	0.44
Agricultural waste/charsoal			In this table	0.98	0.88
Other biomass			In this table	0.00	0.00
Clinker-to-cement ratio (average % of clinker in cement)	x	EN2	SR 63 / 65 / 83	76.7	76.7
Fuel consumption total (million GJ/year)	x	EN3	In this table	72.5	78.6
Power consumption (specific kWh/t)	x	EN3	SR 90	109.2	110.7
Power consumption (total million KWh/year)	x	EN3	SR 90	2,706.9	2,932.4
<b>ENERGY-EFFICIENT PRODUCTS</b>					
Initiatives to provide energy-efficient or renewable energy based products		EN6	SR 65 - 68	data na	data na
Initiatives to reduce indirect energy consumption		EN7	SR 64 - 68	data na	data na

KEY PERFORMANCE INDICATORS	KPI	GRI	PAGE	2009	2010
<b>RAW MATERIALS</b>					
Breakdown of raw materials used in clinker and cement production (t)	x	EN1	SR 90	Table SR 2009	Table SR 2010
Alternative raw materials substitution rate (%)	x		SR 83	9.3	8.7
Alternative raw materials used in clinker production (t)	x	EN2	SR 78	1,591,952	1,458,608
Alternative raw materials used in cement production (t)	x	EN2	SR 78	2,103,875	2,091,931
<b>OTHER ATMOSPHERIC EMISSIONS</b>					
<b>Monitoring rate of main pollutants and micro pollutants emissions</b>					
Implementation rate of continuous main pollutants emission monitoring in kilns (%)			In this table	97	97
KPI1: % of clinker produced by kilns covered by a monitoring system (continuous and/or discontinuous) for dust, NO <sub>x</sub> , SO <sub>2</sub> , heavy metals (minimum: Hg, Cd and Tl), dioxins and furans (PCDD/F) and volatile organic compounds (VOCs).	x		SR 18	95.0	95.6
KPI2: % of clinker produced by kilns in which the main pollutants (dust, NO <sub>x</sub> , SO <sub>2</sub> ) are continuously monitored.	x		SR 18	95.0	95.6
<b>Main pollutants' emissions</b>					
<b>KPI3a: Dust</b>					
Numbers of kilns reporting in continuous			In this table	33 of 34	33 of 34
Total emissions (tonnes/year)	x	EN20	SR 72 / 75 - 76	3,242	3,010
Average specific concentration (g/tonne clinker)	x		SR 72 - 76	162	145
<b>KPI3b: NO<sub>x</sub></b>					
Numbers of kilns reporting in continuous			In this table	33 of 34	33 of 34
Total emissions (tonnes/year)	x	EN20	SR 72 / 75 - 76	31,593	30,315
Average specific concentration (g/tonne clinker)	x		SR 72 - 76	1,657	1,523
<b>KPI3c: SO<sub>2</sub></b>					
Numbers of kilns reporting in continuous			In this table	33 of 34	33 of 34
Total emissions (tonnes/year)	x	EN20	SR72 / 75 - 76	3,882	3,792
Average specific concentration (g/tonne clinker)	x		SR 72 - 76	194	184
<b>BIODIVERSITY AND RESOURCES CONSERVATION (CEMENT ACTIVITY)</b>					
Number of sites operating in environmentally sensitive/ high biodiversity value areas	x	EN11	SR 85 - 86	11	16
% of sites of high diversity value where Biodiversity Management Plants   are implemented	x	EN11	SR 85 - 86	36.0	37.5
% of sites with quarry rehabilitation plants under implementation	x		SR 85 - 86	78.3	77.1
Significant impacts of activity on biodiversity in protected areas and areas of high biodiversity value outside protected areas		EN12	SR 84 - 86	data na	data na

KEY PERFORMANCE INDICATORS	KPI	GRI	PAGE	2009	2010
Strategies, current actions, and future plans for managing impacts on biodiversity		EN14	SR 87	data na	data na
<b>WATER</b>					
Water specific consumption (m <sup>3</sup> /t kk)	x	EN8	SR 93 / 95 / 90	342,07	285,16
Water total consumption (total million tonnes /year)	x	EN8	SR 90 / 93	6,96	6,16
% of recycled and reused water (%)	x	EN10	In this table	> 50	> 50
<b>SOCIAL PERFORMANCE</b>					
<b>EMPLOYEES</b>					
CIMPOR employees by region (cement)					
Europe : Portugal, Spain			AR/SR 40 - 41	1,317	1,246
South America: Brazil, Peru		LA1	AR/SR 40 - 41	744	831
Mediterranean Basin: Morocco, Tunisia, Egypt, Turkey			AR/SR 40 - 41	1,477	1,455
Southern Africa: Mozambique, South Africa			AR/SR 40 - 41	775	733
Asia: China, India			AR/SR 40 - 41	1,575	1,509
Total number of employee by age group, gender, and region	x	LA2	AR/SR 42 - 43	SR 2009	SR 2010
<b>TRAINING</b>					
Hours of training per employee					
Average all levels (yearly hours of training per employee)		LA10	SR 38	29	21
Education, training, counseling, prevention, and risk-control programs to assist workforce members, their families, or community members regarding serious diseases		LA8	SR 48	Table SR 2009	Table SR 2009
"Programs for skills management and lifelong learning that support the continued employability of employees "		LA11	SR 35 - 38	data na	data na
<b>MANAGEMENT SYSTEMS</b>					
<b>Implementation of OHSAS 18001 (% of operating units)</b>					
Cement plants (%)	x		SR 97 / 99	73,0	73,0
Grinding stations (%)	x		SR 97 / 99	57,0	50,0
Total plants (cement plants + grinding stations) (%)	x		SR 97 / 99	68,0	65,0
<b>OCCUPATIONAL HEALTH AND SAFETY</b>					
Number of fatalities (cement)	x		SR 49 - 50 / 52		
Directly employed	x	LA7		1	0
Indirectly employed	x			6	4
Third parties	x			0	2

KEY PERFORMANCE INDICATORS	KPI	GRI	PAGE	2009	2010
Number of fatalities (cement, concrete, aggregates, dry mortars and other)	x		SR 50		
Directly employed	x	LA7		1	1
Indirectly employed	x			7	6
Third parties	x			0	2
Lost time injury frequency rate:			SR 51 - 52		
Directly employed (cement)	x	LA7		4,1	4,7
Directly employed (cement, concrete, aggregates, dry mortars and other)	x			6,36	5,85
<b>STAKEHOLDERS' ENGAGEMENT</b>					
Stakeholders engagement at local level (% of Group companies):	x	SO1	SR 28 / 31	85,0	90,0
Key stakeholders identification	x		In this table	55,0	63,8
Stakeholders thinkings and expectations	x		In this table	53,8	62,5
Policy to manage stakeholders' requests / needs	x		In this table	51,3	66,3
Communications' tools and supports	x		In this table	63,8	73,8
Key messages about the plant	x		In this table	53,8	67,5
Contacts with stakeholders	x		In this table	75,0	90,0
Regular positive communications to stakeholders	x		In this table	67,5	78,8
Communication to the press	x		In this table	40,0	58,8
Annual budget for stakeholders' relationships	x		In this table	45,0	50,0
Crisis prevention and management	x		In this table	55,0	66,3
<b>LABOR-MANAGEMENT RELATIONSHIPS</b>					
% of employees covered by collective bargaining agreements	x	LA4	SR 39	61	67

**NOTE 1: Non-CO<sub>2</sub> Greenhouse gases:** Emissions of methane (CH<sub>4</sub>) from cement industry are very small due to the high combustion temperatures reaches by the kilns. CH<sub>4</sub> emissions are typically about 0.01% of kiln CO<sub>2</sub> emissions on a CO<sub>2</sub>-equivalent basis. Likewise, data compiled by the sector indicate that emissions of nitrous oxide (N<sub>2</sub>O) from cement kilns are typically small. The other GHG covered by the Kyoto Protocol (PFC, HFC, SF<sub>6</sub>) are found not to be relevant in the cement context.

**NOTE 2:** AR - Annual Report; SR - Sustainability Report; data na - non available; n.a. - not applicable.





# CASE STUDIES

## CASE STUDIES

### BRAZIL ENVIRONMENT WEEK

## SOCIAL RESPONSABILITY

Environment Week was celebrated from 1<sup>st</sup> to 5<sup>th</sup> June by all CIMPOR Brasil's units, through a series of activities that have the major objective of raising awareness about environmental protection.

Various initiatives were promoted at the cement plants to encourage employees (and in some cases the neighbouring communities) to participate and engage in various activities, such as photography competitions on local biodiversity, donation of food, collection of used cooking oil, talks, planting of tree seedlings, inauguration of a nursery garden and ecological hikes.

The young participants in CIMPOR Brasil's social projects also took part in the celebration. In Cajati, the children involved in the "Amiguinhos do Ambiente" (Little Friends of the Environment) project learned a little more about caring for nature and made a trail to discover the plant's environmental recovery area. In Nova Santa Rita, the "Pescar Project" (Fishing Project) students attended lectures on the subject.

The company's activities over this period strengthen its commitment not only to respecting the environment, but also to raising people's awareness that a sustainable world can only be brought about through the involvement and contribution of everyone.



### SPAIN VISIT BY PROFESSIONALS OF THE FUTURE

Following the transparency policy encouraged by the company, local bodies, regional associations, companies, individuals and students of all ages have continually shown interest in visiting our plants.

For that reason, and also due to defining and achieving our sustainability policy, we strive to have our facilities ready for a visit by a third party at any given moment, thus extending the concept of our "open door days" to a more general concept of "open door plants."

It is important to note the events at each of the plants to welcome future professionals, most of them university students, interested in finding out about our cement production process and the uses our product has. We prepared specific guided tours for them as well as training activities about the industry, quality, the environment and safety,





in which we encouraged students to take an active part in order to learn in a practical way, ask questions and give their point of view, as we consider the feedback we receive from them to be vital in order to improve on a continual basis.

Over 1,000 school and university students were given an opportunity to visit the facilities at our centres including those from:

- Chemical Engineering at the University of Santiago
- Santiago de Compostela Occupational Training Centre
- Cordoba School of Mining
- Cordoba Fidiana Institute
- Universidade Politécnica Belmez
- Chemical Engineering at the University of Cordoba
- University of Leon
- University of Huelva
- Andalusian Centre of Environmental Training for Sustainable Development (FORMADES).

As well as visits from future professionals we organised open door days for the local population and neighbouring institutions to get the opportunity to get to know the facilities and become familiar with a sector they previously knew nothing about.

These open days, which aimed to showcase environmental investments and improvements, bring the industry closer to people and improve their perception of the industry in general and thus the results of the open days are extremely positive.

At the end of the year the Toral de los Vados plant had an interesting visit from a group of five-year-olds. The students had shown interest to the board of the plant in finding out how cement was made. Parents, teachers and the protagonists of the day were rewarded with an enjoyable presentation in which, through a little virtual friend called "TRÊS-CÊS" (three Cs – so called because of the initials for raw meal, clinker and cement) they learned about the various production phases and found out about our business.

The visit to the control room surprised them and they were very happy with their day out to the plant. The visit ended with some gifts, which were received with great enthusiasm by our guests, and which will long be remembered by the staff members involved in the activity. The FLACEMA (Andalusian Working Association for Cement and the Environment) programme on Environmental Education Days aims to raise young people's environmental awareness and make them understand the importance of sustainable development. In 2010 both in Cordoba and Niebla, these Education Days were carried out at Institutes near the plants, and over 200 student took part.

Environmental professionals and specialists explained the meaning of the ecological footprint and gave interesting advice on reducing it. They also commented on existing environmental problems and on the main everyday solutions that can be implemented. Representatives from the plant explained the importance of sustainable development for the cement sector, as well as CIMPOR's efforts to protect and investments made in the environment.

## SPAIN

### SPONSORSHIP AND PATRONAGE IN OUR AREAS OF INFLUENCE

CIMPOR's participation in the promotion and development of the communities in which it operates, and improving the quality of life of the region is visible in the sponsorships, donations and protocols in which it is continuously involved. CIMPOR's focus on sport is evident, and an example of this is the financial support given to several sports clubs, to cover costs of equipment, logistics, maintenance of the clubs themselves and even the sports club in Cordoba, owned by CIMPOR, which is intended to promote human, cultural, social, recreational and sports amongst its members.

So far this year two protocols have been signed with Town Halls, to which CIMPOR has granted use of plots of land it owns to carry out sports events. One of the protocols includes granting use of a plot belonging to the Val do Mao (Oral) quarry, for a period of 50 years, to the town hall of O Incio, in Lugo province. The town hall plans to build a multipurpose sports hall on a 6,000m<sup>2</sup> plot that can be used by residents.

Support for underprivileged people is a part of CIMPOR's policies and this is apparent through the donations made by the plants to several Catholic institutions, NGOs and social institutions that benefit economically underprivileged members of society or those at risk of social exclusion.

Staff participation in anti-hunger campaigns organised by MANOS UNIDAS, and to fight poverty and exclusion, run by CÁRITAS, amongst others, demonstrates the involvement and sensitivity that have guided CIMPOR from the outset.

It is important to note that in this direct action with Town Halls that the plants have been readily available to take part in the projects, to boost existing ties and improve the social environment. As well as this every year CIMPOR is directly involved in local patron saint festivals with a view to boosting ties to the local communities.



## SPAIN SUPERVISION AND SUSTAINABILITY COMMISSION

At the plants in Toral de los Vados (Castille and Leon) and Niebla (Andalusia) Supervision and Sustainability Commissions were set up in order to deal with the main concerns of the neighbouring population and establish a relationship of open dialogue. The commission are made up of representatives of the municipal areas and the populations, other members of the community and representatives of CIMPOR (including the plants' directors and those responsible for the environment), who meet periodically to provide greater transparency of information about the business of the plants themselves, listen to general concerns and analyse the most relevant issues, set out priorities in relation to these issues and select ways of continuously improving them.

At the commissions CIMPOR presents the ventures approved by the company as well as the medium and long term plans for improvement. The environmental situation is followed whilst investments carried out to improve both environmental aspects and those to boost the social development of staff and the local populations are assessed.

The welcome given to these commissions by the interest groups is shown through the number of people that attend the sessions and the fact that new groups and people are joining and becoming part of them as permanent members, which is a very positive sign for the future of this venture.

These commissions are focused on providing a more realistic and positive view of the plant environment and have taken part in visits to the plants so that both the members of the commissions and other guests invited along by them can appreciate the improvements that have been made and gain personal insight into the work we do. Thus an understanding is reached on all sides, which leads to a better perception of the problems and active cooperation to solve inconveniences that arise from the development of an industrial activity in the local environment.



## SPAIN COOPERATION WITH THE MEDIA

We consider the media to be a fundamental channel for communicating to our audience the image of who we are and the work we do. The Communications department works on a daily basis to maintain an active, effective, two-way relationship with the media based on transparency. For many years we have thus been in continual contact with journalists specialised in the sector as well as those charged with providing information about the cement industry. Based on these contacts, as well as getting coverage we are able to explain our business, earn trust and increase transparency, all of which benefits the company.

Despite a significant downturn in cement consumption in 2010, due to the crisis within the construction sector, the companies and unions considered it was essential to continue encourage a culture in Andalusia that brings together respect for the environment, for natural resources and the social environment of the companies.

Thus FLACEMA, an Andalusian organisation of which we are founding members, as has been the case over the last few years, in 2010 organised the 5th edition of the Flacema Communication Prize, with the principal aim of raising awareness of the progress made in our industry in terms of sustainable development. The aim is to get the Andalusian media outlets, specifically those working in areas in which we are based, to take part by writing articles about the cement industry.

## TURKEY

### OPEN DOOR ACTIVITY AT YOZGAT WITH BOZOK UNIVERSITY

Yozgat Plant's first "Open Door Program" was carried out with students of Bozok University on 18<sup>th</sup> May 2010. The objective of this programme is to show the cement production activity to university students.

At first, steps of cement production are given to the students as presentations. Also the presentations included quality and concrete sections of cement production. Health and Safety mentality of Cimpor was mentioned. After theoretical information and talk about our first priority, i.e. occupational health and safety, students introduced to the mechanical equipments of cement production, during the plant tour. During the Q&A session the questions were answered. Yozgat Plant contributed to the development of 60 students of Bozok University's Engineering Department.



## TURKEY

### CUSTOMER-ORIENTED INITIATIVES

CIMPOR YIBITAŞ has put in place a programme aiming at giving ongoing "laboratory" and "quality" training to its main customers in order to raise their awareness for the best use and performance of the products it manufactures.

Laboratory and Quality training were given in March this year to customers from central Anatolia. The programme was managed by CIMPOR Yibitaş' Technical Services Manager and by Sivas plant's Technical Services Representative. Training had both theoretical and practical components. The theoretical part of this training programme took place at Sivas plant and the practical part at the customers' own laboratory, and at the end of the training "Attendance Certificate's" were given. The final outreach of this programme was the training of 55 customer representatives in.



## TURKEY

### CONCRETE ROADS AND BARRIERS SEMINAR WAS HELD IN SIVAS

"Concrete Roads and Barriers" seminar organized by Sivas Cement Plant together with Turkish Cement Manufacturers' Association at the Sivas plant's training room on 9<sup>th</sup> March 2010. This Seminar attracted 80 participants from Turkish Highway Authority, Sivas Regional Administration and RMC customers of Sivas cement works.

Prof. Dr. Asım Yeğınobalı and Ahmet Gözen from Turkish Cement Manufacturers' Association, Sivas Plant Regional Sales Manager, Hamit Kaplan, Group Technical Services Manager, Bektaş İşleyen, and Plant's Technical Services Representative, Mükremin Keç, led the Seminar.



## TURKEY

### EARTHQUAKE SEMINAR IN SIVAS

Upon demand from the RMC customers, in Zara – the district of Sivas – an earthquake seminar was organized by CIMPOR YİBİTAŞ at the end of March 2010. Customers and civil contractors from the Zara region attended this Seminar. Facts about the superiority of RMC in earthquake resistant buildings were presented during the seminar.



## TURKEY

### PLANT INTRODUCTION TO UNIVERSITY STUDENTS AT SIVAS

An Open Door event oriented toward in-turn university students took place during 3 consecutive days, in May 2010, at CIMPOR YİBİTAŞ' Sivas cement works, with the participation of 72 students.

Cement sector, company and core activities like OH&S, Production, Maintenance, Planning, Human Resources, and Purchasing were presented to these students, enhancing both technical and organizational aspects of those departments. Presentations were accompanied by specific plant tours.



## SOUTH AFRICA

### PRINCESS NOMBUSO EARLY CHILDHOOD DEVELOPMENT CENTRE

The Project of the Princess Nombuso Early Childhood Development Centre came about after the crèche in the area was gutted by fire and children were left with no structure to use. The Department of Mineral Resources approached NPC-CIMPOR to help which resulted in a partnership with Hibiscus Coast Municipality and KwaNzimakwe Tribal Authority; since the crèche falls in their area.

A five roomed structure made up of 3 classrooms, an office, a kitchen, a bedroom, toilets and bathroom was constructed. The objective was making sure that the centre provides holistic support to children and offers what no facility in the area has offered before.

NPC-CIMPOR has decided to adopt the project and ensure that services offered are of the required standard. The crèche has three educators that have not been properly trained and are due to undergo training in 2011.

The crèche has a committee that is responsible for the running and governance, which also requires assistance in terms of the running and management of the crèche and staff issues. Training has been organized for the committee and will be undertaken shortly.



## SOUTH AFRICA

### NKONKA SCIENCE LABORATORY

Nkonka High School is situated along the Harding road towards the Simuma plant. It has managed to produce very good results despite lack of resources; especially good physical science results without a science laboratory. NPC-CIMPOR initiated discussions with the KZN Department of Education on providing science facilities to various schools in the South Coast and Nkonka is the first school to benefit from the programme which will see three other schools in the area benefit over a three year period.

Mr Shange, school principal, has expressed his appreciation and also emphasized the difference that the facility has already made in the learning and teaching of science in the school. The school achieved a 99% pass in the science subject for 2010.



## INDIA

### LOCAL IMPACTS ON LAND AND COMMUNITIES / COMMUNITY WELL-BEING

CIMPOR's Shree Digvijay Cement Company (SDCC) has always been committed to the wellbeing of the society in which it has been operating since the last six decades, by means of an ongoing engagement and developing a set of activities that are meant to have a positive impact on the communities around. The scope of such activities is to attain the company's vision of being a responsible corporate entity.

SDCC plans, every year, several important initiatives like Health & Medical camps, Family Planning sessions, Children Educational initiatives and Religious & Cultural celebrations and plays a vital role of catalyst for exploiting maximum benefits from government framework conditions to residents of surrounding villages.

In the year 2010, several of these initiatives took place, among them 17 Health & Medical camps, 11 Family Planning Awareness events, 5 Child Educational Development activities, 5 Promotion of Diversity and Equality programmes, as well as various Religious & Cultural celebrations.

During 2010, SDCC also launched a very unique initiative intended to train rural women, somehow the weakest link of local society, in making soft toys, leather products and at teaching them computer basics. The scope of this programme is to foster by this way sustainable livelihood businesses and self employment opportunities for these rural women within framework conditions provided by government to encourage further corporate investment. SDCC is not, however, waiting for perfect investment conditions and financial mechanisms to explore and seize potential business opportunities for these communities.

This programme received great response from the local community and a total of 60 rural women have attended it and were trained in the various trades which are expected to help them to develop in the future their own personal activity, creating wealth, new businesses and opportunities for local people, and encouraging more sustainable forms of progress that will represent a modest contribute for achieving the United Nation's Millennium Development Goals.

**MOROCCO****AŞMENT DE  
TÉMARA MAKES  
IMPROVEMENTS  
TO RURAL SCHOOLS**

By building and equipping bathrooms in schools, Asment de Témara helps to reduce dropout rate.

Under the partnership agreement for the environmental rehabilitation of rural schools, signed by the Secretary of State for Water and Environment and the APC (Professional Association of Cement Makers of Morocco), Asment de Témara built and refurbished the toilet facilities in two more rural schools.

This social initiative is part of the process to improve educational conditions for students at these types of school, particularly for girls, who often drop out of school because there is a lack of appropriate bathroom conditions.

**MOROCCO****COLLECT PLASTIC  
BAGS CAMPAIGN**

On 23 March, a campaign was launched to collect plastic bags in Témara as part of a cooperation agreement between Asment de Témara, the Ministry of the Environment and the municipal council.

The three-day operation was inaugurated by the Governor of the town in the presence of Mr. Brahim Laraqui, Managing Director of Asment de Témara. Approximately 15 tonnes of plastic waste were collected during the campaign and later co-processed in the cement plant's kiln.

This event is part of the programme for the elimination of plastic waste, which was signed by the Secretary of State for Water Resources and the Environment and the APC (Association of Cement Professionals) in July 2008. The agreement provides, among other things, that the cement producers to finance the collection and disposal of plastic waste, the development and implementation of communication plans and awareness for the treatment of waste plastics.

In turn, the Secretary of State's office undertakes to agree with the regions the conditions for organising the collection, storage and transport of plastic waste.



## PORTUGAL

### CIMPOR MUSEUM IN ALHANDRA

The CIMPOR Museum, set up at the oldest cement factory in Portugal, at Alhandra, established in 1894 by the entrepreneurial spirit of António Teófilo de Araújo Rato, aims to showcase the industrial and business history and the heritage of this industry in Portugal from the end of the 19th century up to the present day.

The plant started with a capacity of 6,000 tons per year and is now able to produce 2.8 million tons.

The museum's area is spread over two buildings from the end of the 19th century, which have been carefully restored and that originally housed the first kiln for cement production in Portugal – the Hoffmann kiln – exhibited here as a full-size model of the original kiln, and the Laboratory, which shows all the usual areas of a cement laboratory, with areas for physical and resistance testing and chemical tests, and is equipped with antique instruments.

Just some of the aims of the CIMPOR Museum are remembering the birth and development of the cement industry in Portugal and highlighting the importance of its development for the Portuguese economy.

Respecting and honouring its roots CIMPOR recreates and records the past and the work of a number of generations of workers, managers and entrepreneurs, who made it possible for the company to be the successful worldwide cement company it is today.

A significant number of our stakeholders also attended the event as well as representatives of important people in the history of the cement industry that were also involved in the birth of CIMPOR, specifically the Moreira Rato family, descendents of the industry's founder in Portugal, the family of António Champalimaud and of Manuel de Queiroz Pereira.

All the former chairmen of CIMPOR attended the inauguration - José Torres Campos, António de Sousa Gomes and Ricardo Bayão Horta, with the exception of Virgílio Teixeira Lopo (deceased), joining current Chairman of the Board António de Castro Guerra, and Chief Executive Francisco de Lacerda, in unveiling the commemorative plaque for the event together with the Secretary of State for Energy and Innovation, Carlos Zorrinho, representing the Minister for the Economy, Innovation and Development.





## PORTUGAL OPEN DOORS

This year the now traditional Open Doors Program at CIMPOR's cement plants in Portugal beat all previous visitor records – we welcomed 2,743 people at our facilities, a sign of the growing interest in how we carry out our business!

The Loulé plant was the first to open its doors, from 19<sup>th</sup> to 23<sup>rd</sup> April. Alhandra and Souselas were next, on 17<sup>th</sup> May, the former remaining open until 31<sup>st</sup> May and the latter a little longer, until 2<sup>nd</sup> June. Both locally and regionally, these initiatives have aroused great interest, so, beyond the information sessions related to the production process and to Environmental, Quality and Health and Safety management systems, usually followed by guided tour, our colleagues have responded to the diversity of the visitors with great imagination and receptiveness, as the images show.

Students and teachers representing various educational levels are traditionally our main public. This year was no exception and the number was large – 2,079. The next largest categories are local and regional associations, municipal authorities and social and business institutions. We are always proud to put the impact of the interest we have aroused so openly.



## BRAZIL "OPEN DOORS" PROGRAMME

From 20<sup>th</sup> to 24<sup>th</sup> September CIMPOR Brasil held the SGI/SIPAT week (Integrated Management System/Internal Occupational Accident Prevention Week). During the event the "Open Doors" Programme was launched in a renewed format and now in the format of a corporate social project, as already happens with "Pescar" (Fishing) and "Amiguinhos do Ambiente" (Little Friends of the Environment).

The presentation to visitors about the company and its social and environmental projects is now being standardised for all plants, with visual material designed especially for the Programme.

Before finding out about the cement manufacturing process and visiting the plant facilities, participants are given a kit that has been exclusively prepared for "Open Doors" containing an eco-bag, a t-shirt and an explanatory leaflet. With this action all production centres will be using the same language to present CIMPOR in a simple and correct way, describing its activities and, above all, what it has been doing to build a better future for everyone.



**BRAZIL****"AMIGUINHOS DO AMBIENTE" (LITTLE FRIENDS OF THE ENVIRONMENT)**

In September the corporate project "Amiguinhos do Ambiente" (Little Friends of the Environment), which had already been carried out in the João Pessoa and Cajati units, has also been developed by the São Miguel dos Campos plant.

"Little Friends" aims to foster environmental awareness of children from the region's public and private schools. After visiting the plant they draw up a presentation about the environment. That experience encourages interaction with nature and raises awareness of the importance of preserving the environment

In São Miguel dos Campos the project covers children in the 5<sup>th</sup> year of primary Education, with an average age of between 9 and 10. Accompanied by their teachers they have the opportunity to get to know the plant, follow the environmental circuit, get information about caring for the environment as well as watching videos on the cement manufacturing process and playing interactive games.

The plant is going to receive around 150 children per month.

By carrying out these kinds of project in the communities it is possible to create opportunities and contribute to improve both quality of life and the environment.

**EGYPT****DONATION FOR NEIGHBORING SCHOOLS**

In order to support the engagement with neighboring communities and to support also the social commitment of the company to develop the knowledge, AMCC decided to provide 55 PC set to the surrounding schools in old & New Borg Al Arab which not equipped with such technology and also Education Authority.

In addition, AMCC maintained a constant communication with the education authorities in Borg Al Arab & Hammam City regarding supporting the students who not afford to pay the school fees in order to help them coping with their future.

During 2010, AMCC supported 120 Students with total amount of 5,520 EGP as well as Mr. Luís Fernandes - Managing Director - visited some of those poor schools to strengthen the company cooperation.



## SOUTH AFRICA

### BHOBHOYI ORGANIC FARMING PROJECT

A group of 45 farmers were organized and given land by the KwaNdwalane Tribal Authority to produce fresh vegetables for sale in the local market. NPC-CIMPOR got involved through Organic Farms Group; an organization that provides training; support and mentorship on organic farming.

The KZN Department of Agriculture and the Hibiscus Coast Municipality were invited to partner in the project and have provided much needed support and guidance throughout the implementation of the project. The project currently supplies supermarkets in the South Coast areas of Portshepstone; and Margate as well as Ugu Fresh Produce Market.



## BRAZIL

### "FISHING PROJECT" AND CIMPOR

In partnership with the "Pescar Project" (Fishing Project), CIMPOR Brasil graduated 28 young people at the end of last year, at the Nova Santa Rita and Campo Formoso units.

The graduation of the Project's students at Nova Santa Rita took place on 17<sup>th</sup> December, with 13 trainees. This was the seventh class for Assistants Introduction to Civil Construction. In Campo Formoso the end of course ceremony was held on 30<sup>th</sup> November. Fifteen youngsters, from the second class in Professional Introduction to Administrative Services graduated.

The project is still underway at the Company. In the first half of 2011, the first class is due to start at the São Miguel dos Campos unit, also in the Professional Introduction to Administrative Services course.

The Fishing Project involves, not only the services of professionals specialised in teaching, but also the participation of volunteers from the plants that give up some of their time to exchange experiences and improve the knowledge of these young students.

Thus the success of the programme over the years has demonstrated that mobilisation and joint effort is the best way in the search for a common good and social progress.



## EGYPT

### SCHOOL VISITS TO AMREYAH INDUSTRIAL

In order to support the contribution of Amreyah Cement Co. (AMCC), CIMPOR's Egyptian affiliate company, with the surrounding community and to support also the social activities with spread the knowledge and experience in the field of cement industries, Amreyah plant agreed to invite number of schools to visit the industrial area.

AMCC invited the neighboring schools to visit its Plant; the visits were during 2 weeks starting from 18<sup>th</sup> till 30<sup>th</sup> April 2010.

Around 300 students (15 students from each school) and (40) schools teachers visited the plant in 2 groups each day. The program includes (Session, Field Tour, lunch & gifts).

The Plant's employees cooperated with local community to plan activities that promote environmental awareness and feedback for schools students which are devoted this year for the plant neighboring 6 primary and 14 Intermediate schools from Old and New Borg Al Arab & Hammam City (Alexandria).

The sessions were given by all Service Managers starting with presentation regarding the Plant cement industry and open discussion. Afterwards, they conducted a field trip in the plant starting by visiting (Crushers, Line 1, line 2, line 3, central control room, Packing area and CIMPSAC) under the Company's Safety regulations and supervision.

AMCC defined budget for the school visits 1,8325.00 EGP per year 2010 included lunch and simple gifts defined by the company which beneficial to the children and the youth. Besides, the gifts express the company point of view regarding safety and environment such as (notebooks, pens, stationary, hats, puzzles and T-Shirts).

Amreyah Cement Company received many drawings and reports from the students who visited the plant expressing how much the visit reflected their joy and enrich their information about the industry, company and the plant.



## SOUTH AFRICA

### NPC SUPPORTS ENTREPRENEURSHIP

For about two years NPC-CIMPOR has been supporting the entrepreneurship of a couple of managers of a bakery in Cato Manor. Since 2008, NPC-CIMPOR has been maintaining a close relationship with the Khayaletu Primary Confectionery Cooperative, a bakery situated in the Umkhumbane Entrepreneurial Support Centre, on Booth Road, Cato Manor, which is managed by eight aspiring entrepreneurs, all of them women.

The first phase of the programme included a few months' training, which provided them with specialised bakery classes and – just as importantly – business management skills. At the end of 2009, NPC-CIMPOR took a step forward and purchased high-quality equipment to enable the bakery to produce its delights at a much faster and more efficient rate

Now that some of the obstacles have been overcome, the women are operating a fully functional bakery that supplies a wide variety of bread, rolls, cakes and biscuits directly to the public.



## MOZAMBIQUE OPENS DOORS

As part of the program of involving local communities in its activities, Cimentos de Moçambique's (CM) Matola plant opened the doors from 19<sup>th</sup> to 22<sup>nd</sup> July for an event dedicated to the surrounding communities in Matola, Boane and Maputo. The initiative was extended to university students, who had the opportunity to familiarise themselves with the production process at the country's largest cement plant.

During this period, guided visits were organised. These were conducted by company managers and included explanations of the production process, quality control and the environmental monitoring and protection measures adopted by CM. Children and young people from Matola's primary, technical and secondary schools also took part in the event.



## BRAZIL FAIR PARTICIPATION

CIMPOR Brasil participated in the 13<sup>th</sup> Construsul – Feira da Indústria da Construção Civil (Civil Construction Industry Fair) in Porto Alegre, Rio Grande do Sul, which ran from 4<sup>th</sup> to 7<sup>th</sup> August and received 70,000 visitors.

At the event, the company presented two new products from its mortars line: – “Adesivo Sobrepiso” (flooring adhesive) and “Colante AC-III Porcelanto e Peças Cerâmicas” (glue for porcelain and ceramic objects), both developed to offer customers practical solutions suitable to specific works.

The occasion was also used to rerun the “CIMPOR já é de casa” commercial campaign, which reflects the efforts made in recent years to consolidate partnerships and relationships by bringing customers into closer contact with the company's reality, goals and values.

The whole range of products were displayed at the stand, and technicians and sales officers were present to explain their characteristics and recommended uses.



## BRAZIL

### CIMPOR'S ACHIEVEMENTS

CIMPOR Brasil closed the first half of 2010 with achievements that demonstrate the market's recognition of the way it runs its businesses. In May, it was among the three most voted companies proposed by retailers for the "Industry's 17<sup>th</sup> Concept and Image Ranking", a competition organised by "Revenda & Construção", one of the sector's most respected magazines nationwide.

For the second year running, CIMPOR ranked second in the cement segment's Pulverisation/Large Customer categories.

In the same month, retailers in Bahia state voted to honour the company with the "Fifth Top Retail Supplier Award – Retailer Merit", organised by the "Federação das Câmaras de Dirigentes Lojistas da Baía" (Bahia Retail Managers' Federation of Chambers). For the third year, CIMPOR Brasil achieved the most brand recognition in the building segment's cement category.

To close the half-year, the company was also nominated for the Best Construction Material Industries Award, an initiative by ANAMACO magazine, another of the sector's main publications.

Once again, CIMPOR Brasil ranks among the three major companies in the Pulverisation/Large Customer categories.



## TURKEY

### YOZGAT PLANT: HIGHEST CORPORATE TAX PAYER OVER THE LAST DECADE

CIMPOR Yibitaş whose 81.70% of shares belong to CIMPOR, had been accrued the highest corporate tax of Yozgat City with the amount of 3.096 KTL for 2009 fiscal year. Yozgat plant has achieved this record over the last 10 years.

The award of this record had been presented by Rifat HİSARCIKLIOĞLU, President of Turkish Chamber of Commerce and Markets to Mr.Zeki SAĞLAM, General Manager of Yozgat cement works.



## SOUTH AFRICA

### PHOTO COMPETITION RUN BY NPC INCREASINGLY POPULAR

One of the objectives of this initiative is to show that concrete can be used in many innovative ways in Art and urban design.

The 2010 edition of the "Develop a New Angle on Concrete" Photographic Competition attracted over 400 entries from amateur and professional photographers from across KwaZulu-Natal, which represented a 100% growth on the 2009 entries.

Commenting on the growing success of the competition Mr. Peter Strauss, the company's Chief Executive said: "Once again we had a very positive response to the competition this year, with an extraordinary number of potential winners amongst the participants." "Concrete is an extremely versatile material and the photos reflect the diversity of its multiple and creative uses," he said explaining that one of CIMPOR-NPC's objectives was to show how this material can be used in many innovative ways in Art and urban design.

The high quality of the works, inspired by the cityscapes of KwaZulu-Natal, impressed the judges. Mo Hope-Baille, of the Photographic Society of South Africa, said: "We were looking for images that celebrated the art of cement and concrete; that told a story and delivered on brief. And, the extremely high standard of the entries we received made judging extremely difficult." The winning photographs of the external competition, as well as the top 5 entries from NPC's internal staff competition were on display at the preview evening and later at the KZNSA gallery for one week. The photographs are now touring the country.

The Winners: 1<sup>st</sup> Prize – Andrew Griffin - "Blackburn pedestrian footbridge over the N2 highway " 2<sup>nd</sup> – Gavin Fordham – "John Ross Bridge at Richard's Bay"; 3<sup>rd</sup> – Michelle Hibbert – "Kinetic Art / Nichol Square Parkade in Durban's CBD."

NPC Winning Staff: 1<sup>st</sup> Prize - Patricia Kekewich; 2<sup>nd</sup> – Chris Barr; 3<sup>rd</sup> – Nissa Khan.



## MOZAMBIQUE CIMPOR BETÃO MOÇAMBIQUE AWARDED

The company ranked 3<sup>rd</sup> amongst the Best companies and 4<sup>th</sup> in terms of Turnover in the Construction Sector.

CIMPOR Betão Moçambique, was placed 1<sup>st</sup> in the category of Biggest Variation in Turnover in the Industrial Sector amongst the 100 Biggest Companies in the country.

The Prize was awarded on 9<sup>th</sup> December, 2010 by the world renowned consulting company KPMG, based on analysis of a study carried out in 2009 and now in its 12<sup>th</sup> edition, covering all the business sectors in Mozambique.

In 50<sup>th</sup> place (a rise of 15 positions over the previous year) by Turnover in the Ranking of the 100 Biggest Companies, CIMPOR Betão Moçambique was also ranked 3<sup>rd</sup> amongst the Best Companies and 4<sup>th</sup> in terms of Turnover in the Construction Sector.



## CIMPOR GROUP

### CIMPOR BRINGS TOGETHER "CLIENTES MAIS" IN CHINA

In 2010, the CIMPOR - Industria Customers' Meeting took place in the People's Republic of China. The cities of Beijing and Shanghai were the chosen destinations for another Meeting, which brought together the company's biggest customers in 2009, in the "Bag" segment.

The visit, between 12<sup>th</sup> and 20<sup>th</sup> October, to EXPO Shanghai and, particularly, to the Portugal Pavilion, was one of the trip's main attraction

During the trip the usual working meeting took place in Shanghai and was Portuguese Consul-General in Shanghai Moreira de Lemos, whose presentation dealt with the opportunities that the Chinese market may represent for western companies, particularly Portuguese ones. The meeting was also attended by Manuel Couto Miranda, responsible for AICEP in China, and a local representative of CIMPOR, António Pelicano.

At the "Cliente Mais 2010" (Customer Plus 2010) awards ceremony, Mr. Pedro Marques, Board Member of CIMPOR Indústria, was assisted by António Mesquita and Paulo Capristano (Coordinators of the Technical-Commercial and Commercial areas, respectively). The Customers awarded were: - J. Pereira Ribeiro & Filhos, Lda. (1<sup>st</sup>); - Neves & Rato, Lda. (2<sup>nd</sup>); - Oliveira Monteiro & Soares, Lda. (3<sup>rd</sup>); - Abílio Rodrigues Peixoto e Filhos, Lda. (4<sup>th</sup>); - Fernando Santos Carvalho, Lda. (5<sup>th</sup>).

Prizes were also awarded to the biggest Customers for Hydraulic Lime - Joaquim Ferreira Barbosa & Filhos, Lda. - and for Mortars - Manuel Cardoso Delgado.



## SOUTH AFRICA

### LAUNCH OF NPC-IFTA TRAINING ACADEMY

The academy will increase efficiency and productivity providing quality training on a local level.

In January, 2011 the official opening of the NPC-IFTA training academy located at the Simuma Plant in Port Shepstone, was a milestone in the history of CIMPOR-NPC. CIMPOR has partnered with the IFTA (Ikhaya Fundisa Techniskills Academy), agreeing that it would receive between 100 and 200 trainees per year. The facility, known as the NPC-IFTA Technical Training Centre, will provide training in the areas of fitting and turning, welding, boiler-making, motor mechanic, diesel mechanic, earth moving equipment and mechanics, tractor mechanic, instrumentation and millwright. The partnership not only exceeds the requirements of environmental regulations, but also improves efficiency and productivity by providing quality training on a local level. NPC's current training programme has proved to be a huge success, with many students finding permanent jobs within the Company. The establishment of this new centre will make a significant contribution towards maintaining a continuous pool of technical skills.



CIMPOR-NPC's input to the partnership has been to provide a building and facilities at the Simuma Plant. As both sides are focused on setting up a sustainable centre of excellence, renovation of the site is already underway and is scheduled to be finished in December, 2011.

Mrs. Seema Sukhoo, the Training Manager for NPC said: "This is an important venture for us. Being able to set up accommodation for 100 learners and to properly train them, will at least start to make something of a dent in the shortage of artisans we are currently facing in the South African industry. We believe that IFTA has the appropriate qualifications and given its proven track record we believe we will achieve high levels of success."



## TURKEY KERKENES PROJECT

Kerkenes Mountain lies in Central Turkey, not far from the Cimpor Yibitaş cement plant at Yozgat. About 600 BC the low granite Kerkenes mountain was chosen as the site for an extraordinary new city. The newcomers were Phrygians who for some unknown reason were spreading eastwards after the death of the famous King Midas. This new city, the place called Pteria by Herodotus, is the largest city in Anatolia before the time of Alexander the Great. About 546 BC the city was looted and burnt, probably by Croesus King of Lydia, the richest man in the ancient world.

Thereafter the site was almost entirely abandoned. Since 1993 and international team led by British archaeologist Geoffrey Summers and Mauritian architect, Françoise Summers, both of whom teach at the Middle East Technical University (METU) at Ankara, have used cutting edge remote sensing survey to reveal plan of the entire city in remarkable detail.

Archaeological excavations have uncovered monumental architecture at one of the seven city gates, the Cappadocia Gate, which pierce the seven kilometres of strong stone defences. The entrance passage to this towered gate led into large court in which stone idols were set up. The huge wooden doors that opened into the city were at the back of the court, approached by a stone-paved road. Two people were crushed to death and partially burnt when the timbers in gate was set alight and the high stone walls collapsed; poignant evidence for the violent destruction of the city. Huge stone idols, sculpture and other embellishments were set up at the entrance to the palatial complex together with Old Phrygian inscriptions.

These unique finds, many of which were smashed and burnt when the city was destroyed, have been painstakingly put back together and now form a highlight of the displays at the Yozgat Museum. In 2010 part of what was probably a large temple, one of several within the city, was revealed, while plans for 2011 include an exciting new program that will begin excavation of an entire urban block that has already produced sumptuous ivory. Cimpor, Yibitaş has been supporting these excavations, both financially and through help with construction of facilities that include a conservation lab, workshop and accommodation for the team at the nearby village of Şahmuratlı.

The fate of Kerkenes, the small Phrygian kingdom of Pteria, was to be squashed between two aggressive empires, that of Lydia in the west and the Medes in the east. These two giants fought over control of what is today central Turkey for five years. Pteria would have sided with the Medes, the city perhaps overlooking the famous "Battle of the Eclipse" which ended the war, culminating in a treaty that fixed borders and was sealed by royal marriages. The last total eclipse of the sun in the Second Millennium AD followed a track across northern Anatolia which passed directly over Kerkenes. The high vantage point offered a magnificent panoramic view of this evocative occasion.

Slight darkening of the sky and a surprisingly cool breeze heralded the moment of totality which came with unexpected suddenness. Whether or not a battle was really ended by the total solar eclipse of 585 BC, the wonder of the spectacle would have made a lasting impression on all who witnessed it.

A major focus of the Kerkenes Project over the last ten years has been integration of the archaeology with the rural village community which hosts academics and students from around the world each summer, and from which the workforce for archaeological research is drawn.

Development of appropriate building design and materials goes hand in hand with the need to provide accommodation, workspace and storage facilities for the excavation. Professional architects and students work alongside village people, not only to build but also in the development of ways in which solar power can be utilised at village level, development of village gardens, processing of garden and natural produce.

The long-term aim is to ensure that local stakeholders play a full role in, and profit from, the exceptional archaeological site adjacent to their village over which they have grazed their flocks and herds for generations. To these ends solar cookers and solar driers are being developed from the processing of local fruits and vegetables on a small commercial scale.

Drip irrigation, composting and organic gardening is helped and encouraged, and METU students of architecture participate in "Hands on Building" programs for which they get credits. These activities too are supported by CIMPOR Yibitaş.



## CASE STUDIES

### TURKEY FIRST PLACE IN 2010 HEALTH & SAFETY PERFORMANCE

## EMPLOYEES WELLBEING

The Turkish Cement Industry Employers' Association (ÇEİS) has awarded, in February 2010, through its chairman of the board, the "Best Cement Plant on Safety since 2007" in a ceremony with wide participation of CEOs, Industrial Directors and plant managers from the Turkish cement sector.

Awards were given to those companies whose cement plants have incurred in the lowest lost time incident rate in 2009. The incident data from the previous year from member's plants has been collected and analyzed by the Safety Committee of the Cement Industry Employers' Association, since the beginning of 2007. The assesment of the award is based on number of direct and indirect employees lost time incident at each plant in parallel with lost time frequency and severity rates.

In 2010, three plants have been awarded several prizes as a result of the evaluation of data of 2008. Two of CIMPOR YİBİTAŞ plants, Yozgat and Sivas, won last year, among 47 cement plants in Turkey, this award due to its track record in several indicators like severity rate, frequency rate, last 3 years average on safety training, number of near misses detected and number of emergency response drills.

The program is designed to stimulate interest in accident prevention and to promote OH&S in our sector by providing an incentive to employers for keeping a safe and healthy workplace.



### TURKEY IMPROVING SAFETY IN MAINTENANCE

#### Cement Mill Liner Safe Handling Modification

Sometimes hand or fingers get caught while assembling the cement mill liners provoking unnecessary injuries. To prevent this problem a modification was tested and done on the existing liner design. To facilitate the handling of the liners, two screw threads drilled on the surface of the liner were performed.

By inserting a screw thread eyebolt into those drills a safer handling of the cement mill liners is enabled. Using this assembling methodology, the risk of getting caught between the liners is fully eliminated.

## TURKEY

### IMPROVING SAFETY IN MAINTENANCE

#### Design of Mobile Room type Heat Shield for the Plate Change in the Cooler

Maintenance department can't change plates until cooler reaches an acceptable temperature which means a long time after a plate's failure. In order to accomplish this job a little bit sooner, after the failure takes place, a room type heat shield was designed to be able to work safely. The shield, intended to create a safe-working area during the replacement operation of cooler plates, is mobile and its outer surface was made of heat-proof aluminum-fabric.

## TURKEY

### ANNUAL OCCUPATIONAL HEALTH AND SAFETY PICNIC

Sivas plant Annual Occupational Health and Safety Picnic was organized on 17.07.2010 by the contribution of 380 people (workers and their families). At the picnic site OHS exhibition stands were put and a First Aid seminar was given to the wives of the workers by the site physician Dr. Hamit Okuroğlu. Employee of the year awards and Safety League Champions prizes were granted to winners. A backgammon tournament was also held and prizes were also given for the top three.



## TURKEY

### COMPETENCY LEVEL APPRAISAL PROCESS

Parallel to the blue collar job descriptions, skills / competency definition and appraisal tools were also prepared. This applied to blue collar workers in maintenance, production and quality departments. Department leaders had face-to-face interviews with their department employees and made the correspondent appraisals. According to the results of this appraisal process a Competency Development Plan (CDP) was established for each blue collar worker in those departments. CDPs were summed up as follows according to the main topics and priorities which were detected:

- Coaching
- On-the-job training
- Seminars
- Training in other plants
- Attendance to the fairs

According to the defined priorities, training needs for each blue collar employee were then identified for the period 2011-2013 and a training plan for 2011 was prepared. By 2013, a process review will take place to assess the progress achieved in blue collar skills / competency level.

## SOUTH AFRICA

### STRIVING TO CHANGE A PRIORITY INTO A VALUE

The NPC-CIMPOR companies in South Africa embarked on a campaign in the Occupational Health and Safety (OHS) area in order to turn this priority into a core value for all employees.

11<sup>th</sup> June was a memorable day for NPC-CIMPOR staff as two important launches were celebrated – the 2010 Football World Cup and the OHS campaign.

The initiative was launched simultaneously at all of NPC operations, including cement, concrete and aggregates. The event began with a message from CIMPOR on the subject, intentionally associated to the launch of the 2010 World Cup. At 11.30 a.m., all NPC sites unveiled their banners in a vibrant atmosphere where everyone, wearing yellow and green jerseys, expressed their mood by blowing their vuvuzelas.

All staff, even temporary members, signed their pledge to commitment on a large football jersey to the underlying core theme – A (Apply the Rules), B (Be Responsible), C (Care for Others). They say “Good things come to an end” – so was the case with the World Cup. But for the Occupational Health and Safety Campaign, everyone is sure that the best is yet to come.

Focusing on the zero incidents target, NPC has other interventions planned to make this issue a value that enhances a positive safe environment and a workplace safety culture.



## INDIA

### COMMEMORATING REPUBLIC DAY

26<sup>th</sup> January 1950 was one of the most important days in Indian history. It was on this date that the Indian Constitution came into force and the country became a truly sovereign republic. The long-standing dream of Mahatma Gandhi and freedom fighters in achieving India's independence finally came to fruition. Republic Day of India has been commemorated ever since.

The Shree Digvijay Cement Company commemorates this day in the town of Digvijaygram every year. This year's commemoration began with the 'Hoisting of the National Flag' and was then followed by a speech by the company's CEO, P.A. Nair. Various student groups including the Home Guard Troupe paraded in uniform, with students presenting dance routines, theatrical performances, games and songs on social/cultural and patriotic Indian themes. SDCC employees were honoured throughout the programme by the awarding of various prizes, such as best employee and best overall attendance; the best individual student from each school being awarded school-related prizes for the design competition at Gujarat State level, including a student award for best Gujarat Cadet.

The SDCC School launched its first magazine entitled "LAKSHYA" ("TARGET"), launched by the company CEO, P.A. Nair and then presented to the school's director, Dr. Chain Singh Jasol. Lastly, a Cricket tournament was organised between various SDCC departments and employees. Four teams were created: "Technical 1", "Technical II", "Marketing" and "HR, Mines, School and Accounts". The winner of the tournament was Technical Team I.



## MOZAMBIQUE PROGRAMME FOR PREVENTING AND FIGHTING AGAINST HIV/AIDS

Cimentos de Moçambique (CM), the Mozambican subsidiary of CIMPOR, has continued to develop activities over many years as part of its business response in fighting against HIV/AIDS, launching the Prevention Programme against HIV/AIDS across the involved work areas throughout 2010, affecting a total of 315 employees.

Various structural, educational and laboratorial activities have been implemented throughout the programme in the capital city of Maputo and in the district of Dondo (Sofala Province). The HIV/AIDS Commission (headed by an Administrator and comprising of an HR Director, Focal Point, company Doctor and a trade union representative) was created in order to prepare and approve the HIV/AIDS Policy, in addition to developing various Inter-Personal Communication (IPC) activities aimed at increasing and consolidating currently acquired knowledge in relation to Sexually Transmitted Infections (STI) and HIV/AIDS, as well as promoting the adoption of sensible behaviour and healthy lifestyles. Additionally, Health Counselling and Testing (HCT) services have now been made available to all employees. All HCT sessions were preceded by group counselling sessions, involving attestations from various people suffering from AIDS, in order to stimulate employee motivation and encourage commitment to HCT services.

Counselling and screening sessions took place on three different company levels during the programme's first phase (Matola Plant, Cimbetão and Company Headquarters), reaching out to a total of 142 out of the 315 employees - 45%. A total of 160 employees participated in the sessions at the same locations throughout the second phase, corresponding to another 50.8% of the total workforce.

1502 pamphlets containing varied information on HIV/AIDS as well as around 5892 condoms were distributed during the activities taking place at the three CIMPOR units in the city of Maputo.

In addition to employee training activities, a special workshop was organised for the 12 CIMPOR trainers in order to receive proper instruction on topics relative to Sexually Transmitted Infections (STI), HIV/AIDS and other related diseases, equipping participants with full details on Inter-Personal Communication (IPC), topic facilitation techniques and other activities included in the various educational models.

Other types of awareness activities took place at the Dondo unit; with respective employees and participants of NPC-CIMPOR South Africa being offered various health products.

Four different activities were held during the two days at the workshop: a special play on the perceived risks of multiple and concurrent partners; an HIV/AIDS competition; myths and facts about condoms; as well as other discussions. The activities involved around 70 employees, all receiving mosquito nets and at least one bottle for water purification.



## CIMPOR

### SO&S | 'SHUTDOWN BOOK' FOR ACTIVITIES IN CONFINED AREAS

The "Shutdown Book" has been put into practice so that employees such as the Shutdown Requester, Central Command Operator and Electrician, working in specific areas, may have the appropriate conditions for checking all equipment that needs to be shut down in each individual situation.

This process minimises the possibility of human error due to the potential shutting down of the wrong equipment (TAG), requesting the shutdown of the requested equipment only and leaving all other machinery at the workplace under normal working conditions, no shutdown therefore being necessary.

In other words; prior to this new process, the shutdown requester received a Service Order outlining which equipment needed to be worked on, as well as the service needing to be carried out, afterwards going to the Central Command Room in order to request shutdown of the respective equipment. However, when working on specific pieces of equipment; other types of equipment (e.g., belts, engines, I.D. fans, etc.) can potentially contribute to situations of risk if this equipment is not properly shut down, especially when this equipment is housed in confined areas.

Through implementation of 'Shutdown Book' procedures, the central command operator now has, by direct communication with the electrician working at MCC level and by means of a delivered list for each specific operation, all of the necessary conditions for checking which of the equipment - beyond that of the main equipment or the original equipment to be worked on - must be shutdown; creating the necessary conditions so that work can be carried out in total safety.

## CIMPOR

### SO&S | IMMOBILISATION OF EQUIPMENT FOR MAINTENANCE WORK

Equipment shutdown flowcharts are a very important tool in terms of the development of systematic methods in all CIMPOR Business Areas / Operational Units. These flowcharts are intended to assist with the issuing of equipment Work Permits (WPs), aimed at prevent accidents through the accidental start up of equipment during maintenance operations. Additionally, these flowcharts facilitate the viewing and identification of all equipment that must be shut down, in addition to the standard equipment in which maintenance is to be carried out, making sure that equipment doesn't inadvertently start functioning, moving, releasing energy or start discharging materials during the period in which the equipment must remain halted and inactive (e.g. an electrician when requesting the shutdown of the M5VR02 screw conveyor, must also proceed with shutdown of the M5VE05 fan and M5VR02 rotary valve).



## BRAZIL

### INTEGRATED MANAGEMENT SYSTEM (IMS) / OH&S BEST PRACTICES IN NOVA SANTA RITA

In order to be fully compliant with the provisions set out in NR10 - the technical standard on Safety in Electrical Facilities and Services in Brazil; it is specifically detailed in the respective subparagraphs of 10.8.4 that "qualified, trained and skilled professionals are to be considered authorised through formal approval of the company.", and in 10.8.5 that "the company must establish an identification system that enables the authorisation level of each employee to be identified at any moment in time..."; the Nova Santa Rita operational unit having created the badge "Identification of Professionals Working with Electricity" standard, having since become a benchmark for all other CIMPOR BRASIL operational facilities.





## BRAZIL

### SGI/SIPAT WEEK

All of the CIMPOR Brasil Operational Units got together during the month of September to support Employee Health and Safety - participating in the SGI/ SIPAT (Integrated Management System/Internal Work Accident Prevention Week) event. The week consisted of various lectures, plays, sports tournaments, gymnastic events and other activities, focusing on the quality of life and safety of employees.

## EGYPT

### SAFETY WEEK (2ND TILL 8TH MAY, 2010)

According to the policy of CIMPOR considering the safety of the employees is the first priority and the importance given to spreading the safety concepts awareness for all the level of the employees, Amreyah plant organised an event for one week starting from 2<sup>nd</sup> till 8<sup>th</sup> May 2010. This week is to confirm the commitment of the Top Management with safety and to encourage all the workers to act towards the safety. Safety week was organized as follows:

Activities Daily during the Week:

- 2 groups (10 persons/group) with the supervision of member of the Training Subcommittee make safety observation tour in one area in the plant & filling an inspection sheet to evaluate the strength & weakness points of safety.
- Each of these groups takes session for First Aid & practical session for Fire Fighting by Safety Team in the plant.
- Defensive Driving TBT for the drivers of the truck on the gates.

Activities in Resort:

At the end of the safety week, the company held a social event with sportive activities in an Hotel Resort as the following;

- Luis Fernandes, Managing Director, started the day with a speech.
- Safety Responsible presented awareness session for employees.
- 5 representatives of the inspection group presented what they found during their inspection.
- Health Doctor presented session concerning the right food for the health.
- Sportive Activities as all the employees with the Managing Director play as teams in 9 games, and finally the winner had champion at the end of the day.
- Finally, the lunch was served by the pool side while the music was playing by the DJ in a friendly and family environment.

This event was an excellent practice for the contribution of all the level of the company; Managing Director with all the levels of engineers and technicians which confirmed the supporting and the commitment of the director towards safety.



## TURKEY

### WORLD SAFETY DAY CELEBRATIONS

The April 28<sup>th</sup> is recognised by trade unions throughout the world as a worker memorial day. Celebrations of this day took place in several countries where CIMPOR operates and a message from CIMPOR's Chairman of the Board was transmitted through videoconference to employees in several business units.

Celebrations took also place in CIMPOR's Turkish business unit involving cement plants and A&C facilities sites and including a comprehensive set of activities:

- The presentation was made to the employees by taking into account this year theme "emerging risks and patterns of prevention in a changing world of work" in order to create plantwide awareness of the consequences of work related risks arising from the works.
- At the end of introduction of the main content of this year ILO theme, workshop was carried out regarding the risks threatening the employees life seriously.
- According to the risks raised up at the time of the workshop, corrective action plan was constituted.
- The pins produced particularly for this world safety days were distributed to the employees. Besides that, the posters on "Today, Zero Accident" were posted in the plants where visible.
- Industrial Director of CIMPOR has presented the updated safety key personnel indicator and outlined previous years accidents' main causes.
- Head of Labour and Social Security Training and Reserah Center of Ministry of labour and Social Security was invited to Hasanoglan Cement Plant and he gave a speech in respect to occupational diseases and what are supports to industrial facilities explicitly stated by Government.



## PORTUGAL

### CAMPAIGNS HEALTHY EATING AND EXERCISE & ARTERIAL AGE

CIMPOR's Health Service in Portugal chose Cardiovascular Diseases as the main focus of its activities for the 2008/2010 period. In previous years we focused specifically on smoking, a significant cardiovascular risk factor for our population, focusing on the message at staff training events, and providing those interested in stopping smoking with means of support.

In 2010 the "Healthy Eating and Exercise" campaign had an encouraging level of participation. People who stop by the health facilities of our industrial units can easily find posters of the Food Wheel and exercise Pyramid, which are then explained by the doctor or nurse during an appointment.

The "Arterial Age" campaign, which is now available to CIMPOR, aims to provide a warning of the importance of preventing atherosclerosis (furring of the arteries) and focuses particularly on eliminating controllable risk factors. Atherosclerosis is a silent disease that may have no symptoms, but which contributes to the development of the cardiovascular diseases that affect the population of the entire Western world. The campaign was launched at CIMPOR at the end of June, at its headquarters and in Prior Velho, and 100% of staff members invited joined the campaign with around 80 evaluations carried out. The population/target was selected based on a number of criteria assessed by CIMPOR's Clinical Corp – absence of diagnosed cardiovascular disease, age and presence of at least one risk factor for the disease.



## TURKEY

### 2ND "OH&S DAYS" AT SIVAS

By initiative of the Sivas Governorship and under the leadership of Sivas cement works, the '2<sup>nd</sup> Occupational Health & Safety Days' were held at the Sivas Chamber of Trade and Industry headquarters in May 2010.

Employers and employees from several companies of Sivas district attended this Seminar that was developed around major topics:

- Employer and employee responsibilities regarding Occupational Health & Safety issues;
- New approaches to Occupational Health & Safety and the role of Work Inspection Council's activities;
- Industrial Occupational Health & Safety concerns and initiatives;
- Works at height and rescue operations.

Between the presentations, short theater plays were performed by the Cumhuriyet High School students. The participating companies from Sivas region also set up exhibition stands and among these stands 4 training halls were created to perform several OH&S presentations and related shows.



## PORTUGAL

### TRIBUTE TO EMPLOYEES WITH 20 AND 35 YEARS OF SERVICE

The employees honoured socialised with the members of the CIMPOR Executive Committee and with the Board Members and Directors of the companies represented. On 23<sup>rd</sup> November, 2010 a ceremony was held to honour the employees of the Group's companies in Portugal who during that year celebrated 20 and 35 years of service at CIMPOR.

Before the ceremony there was a tour in the morning that included visits to the Jerónimos Monastery and Coach Museum, with a midway stop to taste the famous and sweet pastries known as 'Pastéis de Belém'. Then, all the guests and participants went on to Casal de Paulos Mansion. This beautiful, small country house on the outskirts of Lisbon was the venue for the commemorative lunch, attended also by members of CIMPOR's Executive Committee and the Board Members and Directors of the companies represented. At the end of the meal and prior to the presentation of awards, Francisco de Lacerda, CEO, after expressing his satisfaction for belonging to the Company's Staff and be able to attend the event, thanked the guests for their efforts and dedication that had contributed so much to the internationally recognised reputation that currently CIMPOR is proud of.



## TURKEY

### CIMPOR YİBİTAŞ CELEBRATES THE LOYALTY OF ITS STAFF

Tribute was paid to staff who completed, 5, 10, 15 and 20 years of service at Yibitaş. In order to promote loyalty and long service of the staff who complete pre-established periods of service – of 5, 10, 15 and 20 years - CIMPOR Yibitaş organises commemorative events at its facilities.

At the Sivas Plant, the commemorative ceremony took place last December, covering the staff who in 2010 completed those years of service, who received commemorative plaques.



## MOROCCO

### IMPROVED SAFETY AT CIMPOR MOROCCO

CIMPOR has equipped its production unit in Morocco with safety walkways to access all the mills. The nature of the clinker and cement production business requires frequent maintenance work on equipment, particularly in the mills.

These operations require work at height, which involves an imminent risk of falling if there is lack of appropriate means of prevention.

Although the use of anti-fall harnesses has always been an indispensable and compulsory requirement, this is just an individual protection device.

At the mills, eliminating the risk of fall, requires collective protection equipment, which consists of installing safety working platforms reinforced with regulatory guard-rails. Thus, CIMPOR has equipped its production unit in Morocco with safety platforms that allow access to the mills – two raw mills and three cement mills.

This measure received a positive reaction from users, who have confirmed their satisfaction with this improvement in working and safety conditions, thus contributing not only to prevent potential accidents, but more important, to preserve a healthy and safe social environment in the plant.



## CASE STUDIES

### SPAIN "IGNISCUM REAL" AS ALTERNATIVE FUEL

Near the Oural plant a project is underway for intensive production of a plant called *Igniscum real* (*Fallopia Sachalinensis*), which can be used as an alternative fuel with a 100% biomass content, which would reduce the plant's CO<sub>2</sub> emissions.

In an initial phase an area of 6 hectares is due to be planted, which will make it possible to establish the production yield per hectare. Only from the second year onwards, after going to seed, will the fuel start to be used, and it is estimated that the yield will total between 35 and 40 tons of dry material per hectare.

Based on this productivity, and without additional costs other than treatment, harvest and transport to the plant, in the following years harvests are expected to total between 210 and 240 tons per year, and this could reduce CO<sub>2</sub> emissions by between 350 and 400 tons per year. Resulting savings of petroleum coke, considering a heat capacity of 3,900 Kcal/kg, would be between 105 and 120 tons of petcoke per year.

Based on the results and taking into account both yields and total costs, we will consider increasing the production area from 200 hectares to 1,000 hectares in order to supply both the Oural and the Toral plants with this alternative fuel.

A production area of 1,000 hectares will make it possible to produce approximately 35,000 tons of this plant, which would lead to a reduction of 58,000 tons of CO<sub>2</sub> emissions per year.

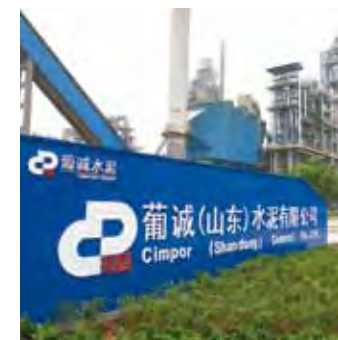


### CHINA APPLY AND PROMOTION ON WASTE HEAT POWER GENERATION

To respond positively to the Chinese's National Energy-Saving Program, CIMPOR installed at the Shandong's plant a waste heat recovery system for power generation with a capacity of 11.5MW. In 2010, the total energy savings from the electrical grid amounted to 33,847 MWh, which represents an indirect coal consumption reduction of 4,200 tonnes and related CO<sub>2</sub> emissions reduction of 10,400 tonnes. For further improvement of the generated power output, Shandong plant has conducted a review of the facility and has in place an improvement program to attain the target of 30 kWh / tonne of clinker.

To take full advantage of the waste heat also available at its new plant 5,000 tpd cement production line, inaugurated in 2011, in Zaozhuang, CIMPOR (Zaozhuang) Cement Co., Ltd is planning to develop another waste heat recovery project for power generation, which will result in an indirect displacement of 26,000 tons of coal, and CO<sub>2</sub> indirect emissions' savings of 69,000 tons.

This project was already approved and its design and construction will start in 2011.



## SPAIN

### TORAL INVESTS IN ENVIRONMENTAL AREA AND PRODUCTION EFFICIENCY

In 2011 the Toral de los Vados plant plans to invest around 2 million euros to improve the environment and the efficiency of the production process, measures which are outlined in the Environmental, Innovation and Development Plan put forward by the plant.

The investment was announced to the media outlets of Comarca do Bierzo during the Santa Bárbara festival.

In order to improve the transport of the products that leave the factory part of the investment will be used to repair the locomotive that served the plant for decades, but which became obsolete over the last few years.

This project also has some environmental benefits as it reduces the volume of products transported via road and thus emissions of polluting gases and noise pollution.

The other part of the investment is more directly related to sustainability as it will be used to build a warehouse to store alternative fuel and a transport and dosing system up to the process' feed point.

This project is a decisive step towards the start of co-processing, which will reduce the plant's polluting emissions and contribute to solving the problem of creating waste and its dumping at landfill sites.



## SPAIN

### IMPROVEMENTS MADE TO WATER NETWORK AT TORAL DE LOS VADOS

In 2008 the replacement and modernisation of the water distribution network at the TORAL de los VADOS plant was concluded.

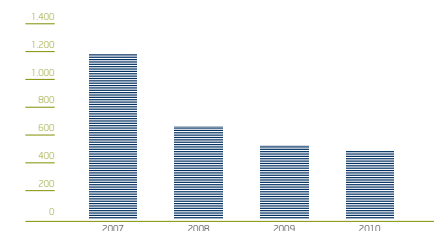
The water collected from the river reaches a regulating tank, from where it then pumped to different points of consumption. Downstream of the tank a ring was installed surrounding the plant's refrigeration core consumption, which is the grinding unit and the raw mills, exchanger, kiln and cement mills, thus making it possible to keep the network operating during work to cut and repair individual facilities.

From the ring there are individual branch lines out to each of the points of consumption, which deliver at the cut-off valve at each building or piece of equipment.

Alongside this distribution network, a collection network for surplus water at points of consumption was developed, basically made up of cooling water for process equipment, which forms a conventional system of drains flowing into a treatment system (decanter-degreaser) that runs into a regulating tank and ensures that cooling water is re-used. Both installations were designed to work as closed circuits.

In terms of water consumption the available figures point to a significant reduction. In 2007 when the circuit was still completely open a total consumption of 1,168,320 m<sup>3</sup> was recorded. In 2008 when the new system went into operation, industrial water consumption totalled 658,963 m<sup>3</sup>, in 2009 it fell to 543,564 m<sup>3</sup> and in 2010 it totalled 444,562 m<sup>3</sup>. Altogether water consumption fell by over 60%.

REDUCTION OF WATER CONSUMPTION (x 1000 m<sup>3</sup>)



## TURKEY

### ALTERNATIVE FUEL'S CO-PROCESSING PERMIT GRANTED TO YOZGAT

CIMPOR Yibitaş Yozgat cement plant has been studying the potential use of different types of wastes as alternative fuels in the clinker kiln. During this study, several waste streams were identified; heat values were measured gate fees and costs were determined and related clinker quality aspects were assessed.

Following this study, a feeding installation was mounted into the kiln's smoke chamber to start industrial tests. The plant of Yozgat started thus in January 2010 a series of trial burns and by the end of May of the same year, obtained a permit for co-processing those tested wastes.

Plant performed a continuous industrial test for 3 days to observe kiln output, kiln process, and effects on clinker quality. The tests showed that including the bottom ash contribution from raw mill side, 16% heat substitution can be easily achieved. However, plant's licence covers several types of wastes and will enable a conventional fuels (petcoke and coal) 35% heat substitution rate by AFRs.

The method for AF feeding used was "stuffing" the voids of the tyres with wastes.

According to current gate fee figures and costs, approximately 300 k€/y can be gained.



## CHINA

### USE OF WASTE MATERIALS FROM OTHER INDUSTRIES AS RAW MATERIALS FOR CEMENT PRODUCTION

CIMPOR (Shandong) Cement Co., Ltd. as part of CIMPOR's initiative to increase the use of AFRs, has begun in 2007 the co-processing of alternative raw materials, following several formal consultations aiming at getting after several tests and studies the approval to use different types of industrial wastes at different stages of cement production, particularly, as cement extenders.

This process was completed with the granting of the Qualification Certificate by the "Economy and Information Committee of Shandong Province" which allows Shandong's plant to use alternative raw materials for the period between January 2010 and December 2011.

Cement's quality isn't affected using this type of alternative raw materials (cement extenders), instead it is improved, and having the different cement types we produce received a good evaluation from the National Project Department, being approved for national projects as those of the high speed railway from Beijing to Shanghai.

In 2010, Shandong's plant produced 1.9M tonnes of clinker, cement 1.01M tons, with a proportional reaches of 18.8% of alternative raw materials (e.g., fly ash, slag, etc), with the consequent reductions in CO<sub>2</sub>-related emissions by means of decreasing the amount of clinker used to make cement.

These practices are intended to minimize the problem faced by Chinese society with the generation of several types of wastes and will help to reduce the amount of wastes that will end up in landfills thus mitigating the associated pollution impacts.





## SPAIN AND PORTUGAL REDUCTION OF NO<sub>x</sub> EMISSIONS

At the plants in northern Spain, in Oural and Toral de los Vados, in 2010 a system was installed to reduce NO<sub>x</sub> emissions.

The most efficient method currently used in our sector is SNCR (Selective Non Catalytic Reduction), which consists of injecting an ammonia solution at a specific point of the pre-heater, to react with the NO<sub>x</sub> breaking it down and forming N<sub>2</sub>.

After the most efficient points for installing the measures and the appropriate concentration of the solution was found (25% ammonia) and manufacturer guarantees established, guarantee tests were planned.

Average emissions at these two plants are below their maximum emissions limit, but in line with CIMPOR's sustainability policy focus was placed on reducing them, not only for the facilities to remain below emissions limits, but also to achieve the current benchmark for kilns and the benchmark set for the future (800 and 400 mg/Nm<sup>3</sup>, respectively) and thus be able to establish the percentage reduction and the cost of using the ammonia solution, considering the future scenarios that we may come up against.

We still don't have results for an extensive period of time, but the first tests carried out had promising results, achieving up to 70% reductions and a yield of over 55%, without affecting emissions of NH<sub>3</sub> per chimney, which were evaluated during the tests and remained at below detectable levels.

As well as installing ammonia injection systems, in the Portuguese plants, specifically in SOUSELAS, in 2010 an improvement was introduced at the facility to optimise the injection system and reduce ammonia consumption.

The improvement consisted of assembling a system to control the flow of the ammonia injection which, using pumps with a variable flow, controls ammonia consumption based on the NO<sub>x</sub> content of the chimney gases resulting from constant monitoring of the kiln and the expected level of emissions.



## TUNISIA

### EMISSIONS REDUCTION

Since its starting up in 1985, the cement plant of Jbel Oust (CJO) used the heavy fuel oil n°2 as main fuel.

In 2005, it substituted 98 % of the fuel with the pet coke.

With a nominal production of 1,200,000 tons of clinker a year, the plant consumes approximately 120,000 tons of pet coke a year.

Due to the constraints of supply, the stock of pet coke allowing a sufficient autonomy is 40,000 tons, stored on a bare area of 145 meters x 56 meters.

Situated in a very windy agricultural region, CJO has concerns about the fugitive dust emission of pet coke which might cause a risk on the health of its employees and an environmental impact within the plant and outside at the agricultural and industrial neighbors. Besides, the dusts emission of pet coke corresponds to a lost energy.

Hence, CJO did studies to prevent the effects of winds on the pet coke stock by locally reducing their speed. These studies ended in the establishment in 2009 of a big dike in ground towards prevailing winds. This solution sharply decreased the pet coke dusts emission.

However, in certain cases of very violent winds and when the pet coke is very fine and dry, there are still emissions.

To ameliorate this situation, an installation of cutting down pet coke dusts by watering is added at the end of 2010 and will be started in March, 2011.

This installation is constituted by a 25 cubic meters water tank fed from an existing water treatment plant, a pump of 50 cubic meters per hour, a network of 150 millimeters buried PEHD ducts, six manual valve gates, six solenoid actuated valve gates and six atomizers of water, taken up on 5 meters height masts to insure the watering of all the storage area.

A remote control, allows the operators to start and to stop the system, if needed.

The functioning of solenoid valve gates feeding the atomizers is piloted by a time switch in a sequential way, so that only one atomizer works each time.

In case of rain, an hygrometer detector allows to cut automatically the water supply.

In this way, the annual use duration of this system of cutting down dusts, planned for the cases where the wind speed is superior to 10 m/s corresponding with a 0,6 % frequency according to the wind rose of the Zaghouan region, would be 53 hours and the annual water consumption would be 2,650 cubic meters.



## TURKEY

### AFFORESTATION OF SIVAS' LIMESTONE AND CLAY QUARRIES

Afforestation quarries from Sivas cement works started in 2004 with the contribution of local Environment and Forestry Administration. The objective is the rehabilitation as soon as possible of the quarries according to the already approved Rehabilitation Plans. In this frame, once the characteristics of this quarry and this exploitation method are compatible to it, the quarry benches whose exploitation is completed are being afforested since 2004. For carrying out these works, the opinion of the specialists from the local Environment and Forestry Administration is being taken into account.

Over the last 5 years, 14,350 acacia nursing plants have been planted. In this rehabilitation process, overburden soil from quarries has been used as top soil. By using this soil afforestation works get facilitated, the need for storing overburden soil is eliminated and a recovery is quickly established.

During 2010, circa 500 acacia nursing plants were planted in Karlıktepe quarry and 2,500 acacia nursing plants in Huykesen clay quarry.

In the future, afforestation activities will proceed on the new opened benches. Since it was possible, in these two cases, to manage the quarry rehabilitation and mining activities simultaneously, the reclamation of the new exploited areas is anticipated and future major rehabilitation costs are significantly decreased.



## TURKEY

### LOCAL IMPACTS / ASPHALTING AND TREE PLANTATION OF THE QUARRY ROAD AT HASANOĞLAN PLANT

Hasanoğlan Plant started clinker production in July 2009. The plant's limestone quarries lie around 12 km far from the plant site. The road between the plant and the quarries passes through CIMPOR YİBİTAŞ Lalahan Aggregate operations. The first part of the road until the Aggregate Operations exists since many years and had already been asphalted by the Local Municipality.

The second part of the road from the Aggregate operations to the quarries was constructed during 2009 and 2010 by CIMPOR YİBİTAŞ within the project framework of the Hasanoglan new kiln line. The total length of the new road is 7.5 km.

During the Environmental and Social Impact Assessment (ESIA) phase regarding these limestone quarries, the Ministry of Environment officials have requested the asphaltting of the road in order to reduce the impact on the neighborhood from the fugitive dust generated during truck transportation of raw materials from the quarries to the cement plant.

The asphaltting of the road took place in August 2010 and was carried out by CIMPOR YİBİTAŞ. Total asphalted distance is 8,5 km, including a small portion of the road close to the plant site exit.

The total cost of this operation was 330,000 €. As this road is passing through an area defined as forestry land, CIMPOR YİBİTAŞ decided to contribute to the forestation of the zone. In 2010, in total 4,355 trees (2,514 acacia and 1,841 cedar tree) have been planted around the quarry road. The total cost of the forestation was 26,000 €.



## PORTUGAL

### FORESTRY REORGANISATION OF RECOVERED AREAS OF THE BOM JESUS QUARRY – A TOOL FOR BIODIVERSITY

The Alhandra plant, which is over 100 years old, is one of the repositories of CIMPOR's know how. Located in the town of Alhandra, on the right bank of the Tagus River, some 25 kilometres from Lisbon, has good road, rail and river access.

The Bom Jesus quarry is an integral part of this factory, is just 2 kilometres from it and covers an area of 346 hectares.

The recovered land plays an important role in the regulation of the water and air cycles, as well as soil conservation and have contributed to increased biodiversity of the local fauna and flora with significant benefits to the urban and peri-urban areas surrounding it. In terms of vegetation the land that explored by the quarry previously had a poor covering of vegetation, with poorly developed agriculture that was limited to olive groves and abandoned pastures. Scrub on top of eroded or incipient soil was the dominant structure (e.g., *Acacia sp*; *Arundo donax*; *Lonicera implexa*; *Pistacia lentiscus*).

The process of landscape recovery that begin with filling in the quarry's cavity with sterile soil, its landscaping and spreading of covering soil following the removal of the mineral mass and then reforestation, transformed the area into one with a high diversity of plants mainly made up of native and regional species. A statistical analysis showed that the entire study area has a natural continuum and contains different phases of ecological succession up to the vegetation that is close to the climax forest that has 4 RELAPE species (Rare, Endemic, Localised, Endangered or Threatened with Extinction), specifically: *Antirrhinum linkianum*, *Genista tournefortii subsp. tournefortii*, *Serapias parviflora* and *Ulex airensis*.

Following the end of operations at the quarries and their landscape recovery, a state of equilibrium and an increase in biodiversity has been achieved, although the process has not come to an end with the reforestation of the land. Pioneer species used in the first phase of the recovery are currently being gradually replaced with species with reduced colonisation capacities, but which have a greater conservation potential.

Thus the dominant species Pinus sp. is being replaced with Quercus sp. The aim of this is to increase the resilience of the forests to biotic agents (e.g., forest blights) and abiotic agents (e.g., fires). At the Bom Jesus quarry there are currently 9,000 *Quercus faginea*, *Quercus rotundifolia*, *Arbutus unedo* and *Laurus nobilis* plants planted in an area of approximately 20 hectares, representing 15.7% of the area recovered so far. At all of its operating units CIMPOR shows great concern for the environment and seeks to minimise the temporary effects of loss of soil and vegetation resulting from quarrying for minerals used to manufacture cement.

From the work carried out at the Bom Jesus quarry it is clear that not only is it possible to return the land to the biological balance it enjoyed before it was used as a quarry, but also to change a situation of low biodiversity to one of a progressive increase in the biodiversity of land where exploration has come to an end, and achieve a situation of self-sustainability. However, only with continuous well-structured and planned out work will it be possible to achieve the projected aims of a steady increase in biodiversity.



**BRAZIL****ENVIRONMENT WEEK  
AT NOVA SANTA RITA**

In June 2010 CIMPOR BRASIL / Nova Santa Rita, as part of its Integrated Management System (SGI) carried out a number of initiatives to promote Environment Week. Amongst the activities were:

The launch of the used Vegetable Oil Collection Campaign in the neighbourhood, with the installation of recycling points at Barão do Teresópolis School and the Plant's Reception accessible to staff and neighbourhood residents and in 2010 around 1,200 litres of oil was collected at the company's canteen for recycling.

A talk was given by a representative of Ecológica, a vegetable oil recycling company in the state of Rio Grande do Sul on Recycling Used Vegetable Oil and Environmental conservation, at the Barão do Teresópolis State School, in the Morretes neighbourhood in Nova Santa Rita, for students from years 5 to 8. Forty two people attended and their knowledge of environmental issues was assessed via a questionnaire drawn up by SGI.

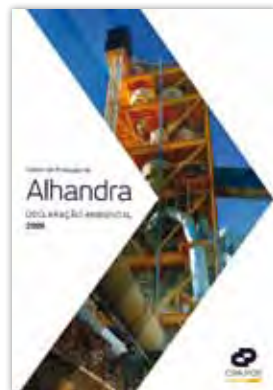
A talk was also given on Recycling Used Vegetable Oil and Environmental Conservation at the Morretes Neighbourhood Community Association, which was attended by 20 members of the community, and an activity to raise awareness of staff and students from "Projecto PESCAR" on Environmental Conservation based on sector-specific talks.

**PORTUGAL****ALHANDRA,  
SOUSELAS,  
AND LOULÉ SEE  
ENVIRONMENTAL  
MANAGEMENT  
SYSTEM APPROVED  
AGAIN**

The Environmental Statements of CIMPOR's plants in Portugal show that continual improvements are a reality. The APA (Portuguese Environment Agency) for the second consecutive time, and until 18<sup>th</sup> October 2013, renewed the registration in the EMAS (Community Eco-management and Audit Scheme) Regulation of the Environmental Management System at CIMPOR Indústria's three Production Centres - Alhandra, Souselas and Loulé.

This decision, which is part of a continuous process started in 2006 with the publication of the first Environmental Statement (ES) on performance in 2003, was based on verification and validation of the Environmental statements of these cement plants in Portugal, relating to 2009, and the electronic editions of which can be accessed on the website [www.cimpor-portugal.pt](http://www.cimpor-portugal.pt).

There we can see that our vision of continuous improvement is built in a very concrete and objective way!



**INDIA****SHREE DIGVIJAY  
ORGANISES  
18TH MINES  
ENVIRONMENTAL  
MANAGEMENT WEEK**

The Mines Environment and Mineral Conservation Week is an event celebrated every year throughout the State of Gujarat

Shree Digvijay hosted the 18<sup>th</sup> Mines Environment and Mineral Conservation Week, an event celebrated every year throughout the State of Gujarat by the mining community. The celebrations, which are supported by the Udaipur regional delegation of the Indian Bureau of Mines took place from 24 to 30 December, 2010. The closing ceremony was held on 9<sup>th</sup> January of this year at the Shree Digvijay plant.

C.S. Gundewar, Controller General of the Indian Bureau of Mines was the Chief Guest at this ceremony, which was attended by over 600 guests and was chaired by PA Nair, the CEO of Shree Digvijay.

Seventy three Mines representing the Soda Ash, Cement, Bauxite, Fluorspar Manganese, Chalk and Clay industries took part in the celebrations. A total of 179 prizes were awarded and Shree Digvijay won the following in the "Cement Group Category": - Management of sub grade minerals – 1<sup>st</sup> Prize; - "Publicity and Propaganda" – 1<sup>st</sup>; - Water pollution control measure – 2<sup>nd</sup>; - Air pollution control measure – 3<sup>rd</sup>; - Noise, Vibration Control & Visual Impact – 3<sup>rd</sup>; - Community Development – 3<sup>rd</sup>; Overall Performance – 2<sup>nd</sup>.

Shree Digvijay Cement's Public School children performed a provoking and inspiring play, dance and singing show calling attention to the issues of the Environment and Conservation. The ceremony ended with a lunch and handing over to the Porbandar Unit of the Saurashtra Chemicals company, which will host the 19<sup>th</sup> Mines Environment and Mineral Conservation Week.



## SOUTH AFRICA

### PROJECT MAY CHANGE DESIGN OF CONCRETE PAVEMENTS

The design being tested has a high cement content and may add as much as 20 years to the lifespan of an existing road surface.

Over the next few months a very interesting project will take place at Mvoti Toll Plaza, in KwaZulu-Natal (KWN), which may change the face of concrete pavement designs in the future. Martin & East, a Cape Town-based contractor, is carrying out trials to replace the existing block paving, with ultrathin continuously reinforced concrete pavement (UTCRCRP) with higher durability.

This UTCRCRP design which is in a developmental phase has so far only been applied in Gauteng, on a section of the N12, and for a truck crawler lane on the N2, in Western Cape province. The next location will be KWN. All these projects are exposed to high traffic volumes and loadings and, although this type of pavement has been extensively tested under the Heavy Vehicle Simulator at the Council for Scientific and Industrial Research (CSIR), its performance in real traffic conditions will be closely monitored during service.

If successful, the South African National Road Agency Limited - SANRAL will apply the technology, where appropriate, to other road rehabilitation projects.

It is a 50 mm-thick continuously reinforced concrete pavement designed for concrete road surfaces. The design mix includes: High cement content silica fume, fly ash, steel and polypropylene fibres as well as admixtures. Cement consistency is vital for the mix design to work. CIMPOR-NPC's cement has been used in the trial and will be used in the project. If it is successful this design could add, with very little maintenance, a further 20 years to the lifespan of an existing road.

It can also be laid over existing road surfaces requiring little preparatory work. The 50 mm layer thickness reduces the quantity of raw materials required as compared to conventional continuously reinforced concrete pavement the thickness of which is 180 mm.

Other benefits include a minimal decrease in current bridge clearances and a minimal need to raise adjacent drainage kerbs and channels.

This labour-intensive process with pan mixers being used on site and manual spreading of concrete, offers an employment opportunity for members of the surrounding communities, areas which are often characterised by extreme poverty.



## PORTUGAL

### CEMENT CONSTRUCTION DAYS

In Portugal, cement industry technical and professional association, ATIC - Associação Técnica da Indústria do Cimento, in partnership with the Order of Engineers re-launched the organisation of the Cement Construction Days, which were held every two years between 1987 and 1999.

The Cement Construction Days, which were held at the end of March, 2011, were aimed at a vast audience, including: Construction Project Owners, Draughtsmen, Construction and Inspection Companies, Engineering and Architecture Schools, Construction Laboratories, Quality and Sustainability Institutions, Construction Associations and the State.

The Programme was based on four central themes linked to the sustainability of construction using cement:

- Sustainability of Cement Solutions
- Cement and the Energy Efficiency of Buildings
- Cement and Communication Links
- Cement in Construction

The days included notable Portuguese and foreign speakers and members of ATIC, including CIMPOR, made presentations on the Social Contribution of the Cement Industry and the WBCSD "Energy Efficiency in Buildings" Manifesto of which our company was one of the first signatories and the talks led to lively and enriching debates amongst the participants.

Statements about these days can be found at <http://www.jornadasatic.com>.



## PORTUGAL

### ECOFUEL PROJECT: AN ALTERNATIVE FUEL GENERATING ENVIRONMENTAL GAINS BY USING RENEWABLE RESOURCES

The ECOCOMBUSTÍVEL (ECOFUEL) is a 3-year R&D project aiming at the production, certification and utilization, in Portugal, of Refuse-Derived Fuels (RDFs) from Municipal Solid Wastes (MSW) and is being developed by a consortium of six partners with the purpose of enhancing the synergies between the potential producers, users and institutions of scientific and technological community.

CIMPOR's partners in this consortium are TratoLixo, SAPEC/CITRI, Instituto Superior Técnico (IST), Laboratório Nacional de Engenharia e Geologia (LNEG) and INETI, and the project is financed by the Portuguese National Strategic Reference Framework (QREN), under SI I&DT projects in co-promotion.

The project began in February 2009 as a result of the efforts by various bodies with overlapping competencies or interests to produce a Refuse-Derived Fuel (RDF), from municipal solid waste (MSW) treatment units and is expected to be completed by January 2012.

This secondary fuel uses the energy potential in every rejected part of waste, generating environmental gains through the use of renewable resources and reducing greenhouse gas emissions, leading to significant decreases in carbon dioxide total emissions.

The composition of MSW depends on the conditions of the city in question. MSW is as a heterogeneous mixture of different types of discarded materials from household, commercial, institutional and industrial sources with variable moisture content. In general, MSW is composed of a combustible fraction (paper, rubber, plastic, fabric, leather, vegetable / putrescible, wood, etc.) and a non-combustible fraction (coal ash, glass, metal, etc.).



Using LCA criteria this solid waste recovery system will provide the best solutions to process solid wastes by utilizing several stages of systematically separating and processing various components (i.e., separating 3 to 6 combustible fractions) out of the refuse, which would otherwise be integrally sent to a landfill (e.g., today 67% of the MSW goes to a landfill and the project aims at reducing this amount by 70%).

Since much of the know-how is dispersed and in need of scientific validation, this project contributes to the technological and scientific consolidation of RDF use and production processes, in that it: enhances competitiveness, a crucial factor for the sustainable development of the most energy-intensive industrial sectors; improves biological stability evaluation methodology, for controlling the production and storage of RDF; establishes parameters for evaluating the biogenic carbon present in the RDF through decay of the carbon isotope ( $^{14}C$ ), currently the object of international research, and also representing the value of national R&TD; develops integrated analysis of the main constraints associated with the use of this type of fuel, through the result of the RDF energy recovery efficiency tests, thus creating a tool for decision support in the RDF production process.

The activities to develop have as main objective to create a robust, flexible and reliable system to be adopted by the MBTUs (Mechanical Biological Treatment Units) for producing RDFs from Municipal Solid Wastes (MSWs) that will be innovative in the way heterogeneous wastes are blended using artificial intelligence high capacity neural networks that among other aspects will predict the RDFs heat value from the available MSWs and RDF's biogenic carbon content, the best technique available (BTA) for producing the RDF, the optimal recovery rates, and RDF's final cost.

This is the most complex part of the current project. The project will contribute to develop methodologies for evaluating the aerobic biological stability of RDF sand for controlling their production and storage.

Burning efficiency tests of the RDFs will be carried out in clinker kilns and different types of boilers to evaluate the constraints posed by these possible candidates to alternative fuels and to adapt them to market requirements. Trial tests of the "ECOCOMBUSTÍVEL" in cement kilns are scheduled for January 2011.

The ultimate goal of the project is to evaluate the sustainability of the different options and the overall savings in terms of costs and CO<sub>2</sub> emissions.

**NOTE:** Mechanical biological treatment (MBT) encompasses mechanical sorting of the mixed residual waste fraction, with some recovery of recyclable materials (limited due to contamination), and separation of a fine, organic fraction for subsequent biological treatment.

The biological component may include anaerobic digestion with recovery of biogas for energy/heat generation, or aerobic composting to produce a biologically stable product for either land application (limited applicability) or use as refuse-derived fuel (RDF) to substitute fuel in industrial furnaces (i.e. co-processing in cement kilns). MBT facilities vary considerably in terms of sophistication, configuration, scale, and outputs.

## ADDITIONAL INFORMATION

### GLOSSARY

**Climate change:** Any global climate change caused by an overall alteration in the composition of the atmosphere directly or indirectly attributed to human activities. This expression normally describes climate changes caused by higher atmospheric concentrations of greenhouse gases that cause a gradual increase in average temperatures.

**Environment:** All external conditions that affect an organism's life, development and survival.

**Assurance Group:** An independent group created to review and provide advice regarding the study "Towards a Sustainable Cement Industry" of the Battelle Memorial Institute, which ensured the quality and balance of the project and refereed any conflict that might arise between the parties. This group was composed of internationally recognised experts, representing different stakeholder groups and geographical regions.

**Environmental and Social Impact Assessment (ESIA):** A preventive tool for analysing the potential environmental and social effects of a particular project. It consists of studies and consultations, with active public participation, to identify minimisation and compensation measures and analyse possible alternatives. In environmental terms, the goal is to reduce pollution and the project's impact on ecosystems and biodiversity. The main social impact areas include public health and safety, employee safety and health, employment and the visual impact of operating units.

**Battelle Memorial Institute:** A non-profit organisation founded in 1929, with long experience in sustainable development issues. It was selected as the head consultant in the Toward a Sustainable Cement Industry project.

**BCSD Portugal | Business Council for Sustainable Development:** The Business Council for Sustainable Development is a non-profit organisation established in October 2001 on the initiative of the companies CIMPOR, Sonae and Soporcel, members of the WBCSD, together with over 33 other leading companies of the Portuguese economy. The mission of BCSD Portugal ([www.bcsdportugal.org](http://www.bcsdportugal.org)) is to transpose to Portugal the guiding principles of the WBCSD, namely to make business leadership a catalyst for change towards sustainable development and promoting the eco-efficiency, innovation and social responsibility of companies. BCSD Portugal has been a member of the WBCSD Regional Network since its establishment, and it currently has 140 members.

**Biodiversity:** According to the Convention on Biological Diversity (CBD), "biodiversity or biological diversity means the variability of living organisms from all sources, including terrestrial, marine and aquatic environments, as well as the ecological complexes they are part of, and it also includes diversity within species, between species and ecosystems."

**Biomass:** Plant and animal waste used as an alternative fuel.

**Calcination:** A high-temperature thermal process used in the production of clinker to release water vapour and CO<sub>2</sub> from calcium carbonate and make CaO suitable for chemical reactions.

**CEMBUREAU:** The European Cement Association (CEMBUREAU), with head office in Brussels, is the organisation representing the cement sector on the European stage. Its main goal is to fulfil the common objectives of its members by representing them as a lobbyist at European institutions. Currently, its full members are the national cement industry associations and cement companies of the European Union (except Cyprus, Malta and Slovakia) plus Norway, Switzerland and Turkey. Croatia is an associate member of CEMBUREAU. Therefore, CEMBUREAU has 28 members (27 full members + 1 associate member), 18 of which are associations and 10 are cement companies.

**CERES / Coalition for Environmentally Responsible Economies:** A network of 70 organisations including environmental NGOs, investors, analysts, advisers, stakeholders and community groups working towards a sustainable future. It has established a series of guiding principles (CERES Principles) which companies must endeavour to include in their policies.

**Cement:** A material with the capacity to bind to solid bodies (aggregates) and that dries and hardens after having been mixed with water (hydration reaction). The main ingredient of cement is clinker and it can be mixed with different types of materials to produce various types of cement. The most common cement used worldwide is Portland cement, which consists of 95% clinker and 5% gypsum.

**Fly ash:** A substance composed of very fine particles produced at power plants by coal combustion. It is carried in the combustion gases and collected in particle removal systems (electrostatic precipitators or fabric filters). Fly ash is found mostly in a vitreous state and is largely composed of silicone dioxide and aluminium oxides. It has pozzolanic properties which make it useful in cement production. These properties allow it to be used in the manufacture of cement.

**Clinker:** An intermediate product of the cement manufacture process. It basically consists of limestone that has undergone a process of decarbonisation, heating and sudden cooling.

**CO / carbon monoxide:** A colourless, tasteless, odourless, highly poisonous gas resulting from the incomplete combustion of organic fuels.

**CO<sub>2</sub> / carbon dioxide:** A gas resulting from the complete oxidation of carbon and formed in processes involving combustion, respiration or decomposition of organic material. It is extremely important to the existence of life on earth, as the greenhouse effect of its presence in the atmosphere is the main cause of global warming.

**Direct employees (OHS):** Employees hired directly by the company for a fixed term, or not, on a full or part-time basis, with fixed working hours or in shifts, included on the payroll. All employees under the same management and those in companies with which there are management or technical agreements are included. Part-time employees are counted as full-time workers.

**Indirect employees (OHS):** Individual employees or those belonging to companies and corporations (contractors and sub-contractors) providing specific services for the company under a written or verbal short-term (construction, silo cleaning, major repairs) or long-term (maintenance and cleaning crews, canteens, etc) contract. Temporary workers hired from temp agencies are also considered to be indirect. All employees are considered full-time workers.

**Third parties (OHS):** Anyone not classified as a direct or indirect employee. Third parties normally include customers and visitors coming to our facilities (by invitation or not) and other people involved outside company premises in accidents with direct employees, provided that the company admits liability for the accident. This also includes drivers or passengers involved in accidents off the company's premises with company motor vehicles, but only if the company admits liability.

**Occupational accidents (OHS):** This is a sudden, unexpected occupational accident involving direct, indirect employees or third parties occurring at the workplace (1) and during working hours (2) directly or indirectly causing bodily injury, functional impairment or a disease reducing the ability to work or earn a wage, or resulting in death (diseases caused by accidents are distinguished from occupational diseases).

**Workplace (1) (OHS):** Any place in which an employee is or to which they should go to perform their job and where they are directly or indirectly under the employer's control.

**Working hours (2) (OHS):** This is the normal working period, the period preceding its start and involving acts of preparation or related to the work, and the period following its end, also involving acts related to the work, and normal or forced work breaks.

**Occupational disease (OHS):** This is a disease contracted as a result of exposure for a period of time to risk factors arising from an occupational activity. Diseases that are a necessary, direct consequence of the work done by employees and not the normal wear and tear on the body are considered occupational diseases. Only incidents of occupational diseases in direct employees are reported.

**Cement Sustainability Initiative (CSI):** The Cement Sustainability Initiative is a voluntary initiative of 24 multinational companies of the sector whose main objective is to put the issue of sustainability on the agenda of the international cement industry. The companies currently involved in this Initiative are Argos (Colombia), Ash Grove Cement (USA), Camargo Corrêa (Brazil), Cementos Molins (Spain), CEMEX (Mexico) (\*), Cimentos Liz (Brazil), CIMPOR (Portugal) (\*), CNBM (China), CRCH (China), CRH (Ireland), Grasim Industries Ltd. (India), HeidelbergCement (Germany) (\*), Holcim (Switzerland) (\*), Italcementi (Italy) (\*), Lafarge (France) (\*), Secil (Portugal), Shree Cement (India), Siam Cement (Thailand), Sinoma (China), Taiheiyu Cement (Japan) (\*), Tianrui Cement (China), Titan (Greece) (\*) and Votorantim (Brazil), Yatai Group (China).

(\*) Core Members of CSI. The remaining companies are called Participating Members.

**Alternative fuels and raw materials:** The economical use for environmental protection

of waste as fuel or raw materials in cement production, instead of conventional fossil fuels and raw materials.

**C<sub>2</sub>S and C<sub>3</sub>S:** Complex crystalline silicates of calcium and silica known as dicalcium silicate (belite) and tricalcium silicate (alite), which are compounds of the mineralogical stages of clinker.

**C-S-H:** Calcium silicate hydrate.

**Sustainable Development:** It is generally defined as "development that satisfies present needs without compromising the ability of future generations to satisfy their own needs", as first defined in the report "Our common future" published by the United Nations Brundtland Commission in 1987.

**Eco-efficiency:** A WBCSD concept that combines economic and environmental performance to create products with greater value added and lower environmental impact. It is a management tool used to encourage companies to become more competitive, innovative and environmentally responsible.

**Ecology:** The study of relations between living organisms and between them and their environment. The study of ecosystems.

**Industrial ecology:** A concept based on improving industrial efficiency by imitating natural ecosystems. Its aim is to prolong the useful life of raw materials and reduce the environmental impact of industrial activity by closing the cycle of materials, making one activity's waste another's raw material.

**Electrostatic precipitator:** Equipment for removing dust from gases using a very powerful electrostatic field to charge particles. The charged particles then stick to metal side plates inside the device. The particles are released from the side plates by a vibration cleaning system and they fall down to be collected in a hopper.

**EMAS / Eco-management and Audit Scheme:** A European system created in 1993 and subsequently revised (EC Regulation 761/2001 of 19 March) that permits the voluntary participation and registration of industrial companies with an active environmental management system operating in accordance with this Regulation.

**WWTP:** Wastewater treatment plant.

**Fabric filter:** Particle-removing equipment consisting basically of passing a "dirty" gas loaded with solid particles through a filter membrane. The membrane is cleaned regularly to separate and collect the trapped particles.

**Greenhouse gases / GHGs:** Natural or anthropogenic gases in the atmosphere that can absorb and re-release infrared radiation. The Kyoto Protocol identified the six main GHGs

responsible for climate change: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>).

**Global Reporting Initiative (GRI):** Launched in 1997 as a joint initiative of the NGO Coalition for Environmentally Responsible Economies (CERES) and the United Nations Environment Programme (UNEP) with the aim of improving the quality, rigour and utility of sustainability reports. It has enjoyed the effective support and participation of representatives from industry, NGOs, accounting bodies, investors' organisations and trade unions, among others.

They have all worked to achieve a consensus on Guidelines for preparing sustainability reports in order to have them accepted worldwide.

The CIMPOR Group's sustainability reports will abide progressively by the general GRI principles.

**IETA Verification Protocol, version 2.0 / 2005:** A protocol developed by the IETA - International Emissions Trading Association for the verification of annual emissions reports from the facilities involved in the CELE/European Union Emission Trading Scheme (EU ETS) and to facilitate transparent, effective verification of their costs. Although this Verification Protocol may be amended as a result of users' comments, the IETA encourages all stakeholders to use it.

**ISO 14001:** A set of international standards regulating environmental management systems, evaluation of life cycles, system audits, the labelling and assessment of system performance. They have been adopted in Portugal and in the rest of Europe. The Portuguese versions of the standards are called NP EN ISO 14000.

**Best Available Techniques/BATs:** The most advanced, effective stage of development of activities and their operating methods to limit to a minimum the impact of these activities on the environment.

**NOx/Nitrogen oxide** – Gases produced in combustion processes, mainly as a result of the combination of atmospheric nitrogen with oxygen. They contribute to the occurrence of acid rain and the formation of photochemical smog.

**NGOs/Non-governmental organisations:** Non-profit organisations that lobby governments and companies on a wide range of issues as diverse as nuclear disarmament, human rights or environmental protection. NGOs play an increasingly important role in representing society and should be regarded by companies as active partners in drawing up corporate strategies for Sustainable Development.

**Stakeholders:** See "stakeholders".

**Particles:** 1. Small solid or liquid particles in suspension in gaseous emissions. 2. Small solids suspended in water, which may vary in size, shape, density and electric charge and may be collected by filtration, coagulation or flocculation.

**Cement product or material:** A substance that, after being mixed with water, forms a paste that dries and hardens at atmospheric temperature. Natural or artificial pozzolana is considered to be a cement product. Alternative cement products or materials, composed of by-products from other industries, such as blast furnace slag and fly ash from thermoelectric power stations, may be used to replace part of the clinker in cement.

**Kyoto Protocol:** The Kyoto Protocol was the culmination of the Berlin Mandate adapted by consensus at the 3rd session of the Conference of the Parties (CoP3) in December 1997. It sets forth the new targets for reducing emissions of GHGs (greenhouse gases) for Annex I countries after 2000.

**Brundtland Report:** "Our common future" - the report that resulted from the work of the commission appointed by the United Nations in 1987, World Commission on Environment and Development, presided over by the former Prime Minister of Norway, Gro Harlem Brundtland, also known as the Brundtland Report. This work defined for the first time the concept of Sustainable Development and introduced development strategies, social justice criteria and guidelines for environmental protection.

**Senior Advisory Group:** A more recently created independent review and advisory group for the CSI, which aims to ensure the quality and balance of the issues tackled, the interim and final reports produced and to referee any conflict that might arise between the parties.

As occurred with the Assurance Group during the development stage of the Toward a Sustainable Cement Industry study of Battelle, this group is composed of internationally recognised experts representing different stakeholder groups and geographical regions.

**SO<sub>2</sub>/sulphur dioxide:** A gas produced mainly during combustion, resulting from the combination of sulphur from fuel or a raw material with oxygen. It is one of the main causes of acid rain.

**Stakeholders (Interested Parties or Interest Groups)** – Individuals, entities or groups that affect or are affected by the company's business activity (e.g. customers, suppliers, employees, shareholders, local communities, the scientific community, government agencies and NGOs, among others).

**WBCSD / World Business Council for Sustainable Development:** The World Business Council for Sustainable Development ([www.wbcsd.org](http://www.wbcsd.org)) is an organisation set up on 1 January 1995 to promote Sustainable Development. Its members are more than 200 multinational companies from over 30 countries and around 20 important industrial sectors. The regional network of the WBCSD currently has 60 members, including WBCSD Portugal.

The "Toward a Sustainable Cement Industry" project was undertaken under the auspices of the WBCSD, which has been and will continue to be the development platform for the Cement Sustainability Initiative/CSI.

**CIMPOR** - Cimentos de Portugal, SGPS, S.A.  
Rua Alexandre Herculano, n.º 35  
1250-009 Lisbon | PORTUGAL  
Tel: (+351) 213 118 100  
Fax: (+351) 213 118 867  
**[www.cimpor.pt](http://www.cimpor.pt)**

**SUSTAINABILITY**

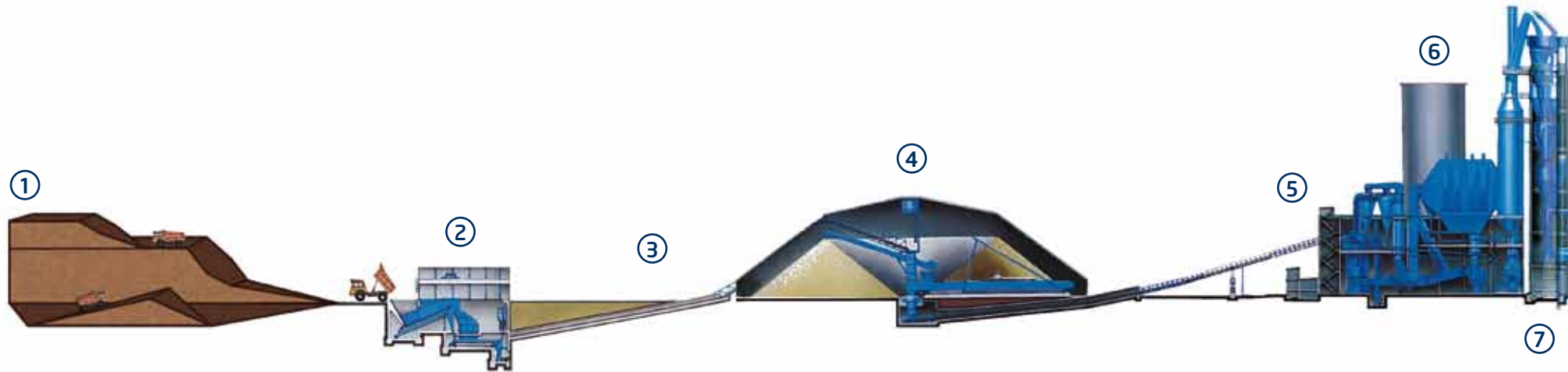
Paulo Rocha  
Tel: (+351) 213 118 125  
Fax: (+351) 213 561 381  
Mail: [procha@cimpor.pt](mailto:procha@cimpor.pt)

**COMMUNICATION AND PUBLIC RELATIONS**

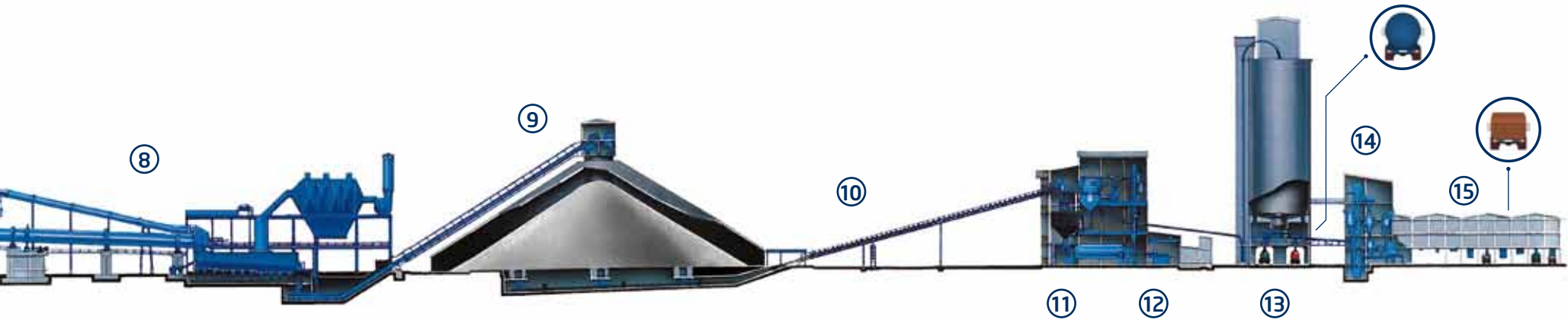
Mafalda Correia  
Tel: (+351) 213 118 188  
Fax: (+351) 213 118 826  
Mail: [drec@cimpor.pt](mailto:drec@cimpor.pt)

**INVESTOR RELATIONS**

Filipa Mendes  
Tel: (+351) 213 118 116  
Fax: (+351) 213 118 867  
Mail: [gri@cimpor.pt](mailto:gri@cimpor.pt)



	QUARRY		PREPARATION OF RAW MEAL					
	QUARRYING	1 REDUCTION	2 TRANSPORT	3 PRE-HOMOGENISATION	4 GRINDING OF RAW MEAL	5 HOMOGENISATION SILOS	6 PRE-HEATING TOWER	7
<b>MAIN ROLE OF MANUFACTURING STAGE</b>	Limestone and other raw materials are extracted by drilling or blasting or mechanical surface mining.	The material extracted from quarry fronts (0-1000 mm) is reduced in size (0-30/40 mm) in impact or jaw crushers.	The crushed material is transported to the cement plant by conveyor belt, truck, rail, or river depending on the distance between the quarry and the cement plant.	The limestone, marl, alternative raw materials and chemical composition correctives are mixed and pre-homogenised in various layers that result in the formation of a pile of material, usually in a covered building. The material in the pile is then removed in a special manner to guarantee its homogeneity and sent to the raw meal grinder.	The homogenised raw materials, which we now call raw meal, (0-30/40 mm) are fed into a ball mill or vertical mill where they are dried and transformed into a fine powder (with a residue of around 12% to 18% in a 90 micron mesh). There may be small final adjustments to the chemical composition of the raw meal before entering the grinder	The powder from the raw meal grinding undergoes a final homogenisation operation and is stored there until being fed into the baking line.	The meal undergoes pre-heating and a substantial percentage of decarbonisation (>90%) before going into the kiln. Large fabric filters or electrostatic precipitators remove dust from the kiln gas circuit and exhaust gas circuit of the grinder.	
<b>MAIN IMPACTS OF MANUFACTURING STAGE</b>	Consumption of raw materials, land use, visual impact, pressure on ecosystems, air emissions of airborne dust, water use, traffic congestion, sudden noise (airborne noise wave) and vibrations.	Emissions of airborne dust, noise.	No significant impacts.	Emissions of airborne dust	Energy consumption, noise.	Visual impact.	Energy consumption, visual impact.	



CLINKER PRODUCTION			GRINDING, BAGGING AND SHIPPING OF CEMENT												
KILN / COOLER	8	CLINKER STORAGE	9	TRANSPORT	10	ADDITIVE STORAGE	11	CEMENT GRINDING	12	STORAGE IN SILOS	13	BAGGING	14	SHIPPING	15
<p>The mostly decarbonised meal fed into the kiln is converted into clinker in a series of chemical reactions taking place at around 1,450°C under the effect of a flame at 2,000°C. The incandescent clinker is cooled quickly in a grate or satellite cooler.</p>		<p>After quick cooling to a temperature of between 100°C and 200°C, the clinker is sent to its storage area, which is usually a stockpile or closed silo though in some cases it may be an open-air site</p>		<p>Clinker, gypsum and additives (cement materials) are transported on conveyor belts to the cement grinding hoppers.</p>		<p>Additives for cement production (e.g. gypsum, fly ash, steel slag or limestone) are usually stored in silos or closed buildings.</p>		<p>After the correct proportions have been measured, the clinker is ground with about 5% gypsum and other additives (cement materials) to produce different types of cement.</p>		<p>The product is separated and stored according to the type and strength class. It is extracted by means of air fluidization systems.</p>		<p>The cement taken from the silos is either bagged, bagged and palletised, bagged and covered with shrink wrap or loaded in bulk directly onto tanker trucks, tanker wagons or ships</p>		<p>After loading, the cement is shipped by road, rail, river or sea, depending on the location of the plant and its infrastructure.</p>	
<p>Energy consumption, greenhouse gas emissions, emission of airborne dust, SO<sub>2</sub> and NO<sub>x</sub> by-pass gas from the kiln (only in some cases), water use (gas conditioning tower and satellite cooler), liquid and solid waste, noise</p>		<p>Emission of airborne dust.</p>		<p>Emission of airborne dust.</p>		<p>Emission of airborne dust.</p>		<p>Energy consumption, emission of airborne dust, noise.</p>		<p>Emission of airborne dust (insignificant), visual impact</p>		<p>Dust emission.</p>		<p>Traffic congestion.</p>	



**CIMPOR**

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Rua Alexandre Herculano, 35 | 1250-009 Lisbon | PORTUGAL

**[www.cimpor.pt](http://www.cimpor.pt)**