

**Contestant profile:**

<b>Contestant name</b>	Miguel Martín Moreta
<b>Contestant occupation:</b>	Social and environmental pedagogue
<b>University / Organisation</b>	Schoolhouse Santiago Uno. University of Salamanca
<b>E-mail:</b>	
<b>Phone (incl. country code):</b>	
<b>Number of people in your team:</b>	2

**Project overview:**

<b>Title:</b>	Writing off the problem. How does extraction of aggregate finish in beautiful landscapes?
<b>Contest:</b>	Spain
<b>Quarry name:</b>	Gravera Áridos Sanz
<b>Prize category: (select all appropriate)</b>	<input checked="" type="checkbox"/> Education and Raising Awareness <input type="checkbox"/> Habitat and Species Research <input checked="" type="checkbox"/> Biodiversity Management <input type="checkbox"/> Student Project <input type="checkbox"/> Beyond Quarry Borders

## Abstract

Social awareness of how our actions affect nature is increasing. Companies, that exploit natural resources, acquire social responsibility to return nature to its original state or even improve ecological conditions in these areas, in order to turn them into key locations which enhance the biodiversity of the region.

We rely too heavily on the need to the extract aggregates, —one of the most in demand natural resources for the development of life in our society. However, these materials are not circulated enough despite the importance of the matter.

Making visible the relevance of a safe extraction of this resource as well as the return and enhancement of exploited areas, becomes an essential goal. At the same time, it provokes an economic revitalization of rural areas where these companies are set up. Therefore, it becomes essential to show these processes to society, in order to raise awareness of the positive effects of this form of quarrying.

Moreover, if we consider strategic learning intervals such as the third cycle of Primary school and the first cycle of Secondary school (a crucial time for the development and maturity of the students) then we have found our audience. We propose the design, development and publication of a teaching guide and a travelling exhibition which provides the aggregate sector and its applications together with the strategic line of sustainable conservation of exploited environments, the significant ecological importance it deserves within the relationship between man and nature.

## Introduction

Nowadays, there is almost no place on earth where man has not left an impact. Throughout history, man has either voluntarily or involuntarily changed the environment. This process has resulted in a host of environmental problems which are merely consequences of the current social rhythm. We have progressed in such a way that has led us to unimagined conquests by our immediate ancestors. However, it has brought with it the alteration of a substantial part of our ecosystems. The system has begun to totter and it is time to change.

Due to the fact that the problem we face is caused by human beings, we consider it necessary to change the habits of Western society. **Environmental education** provide us with a tool for social change, making it possible to eliminate the current anthropocentric and disaggregated vision for a more inclusive one, in which we will be aware of the interconnected system that we are a part of.

In the **absence of any updated educational materials** to make the extraction of aggregate in gravel pits more visible, by placing value on the importance of planning for a comprehensive environmental restoration or making visible the existence of biodiversity management plans to help its ecological conservation, the severe need to transmit and raise awareness about it is observed.

We consider it our duty as environmental educators, to give publicity to those who strive and struggle today to contribute their grain of sand to the change we all desire.

## Objectives

Hereafter, we evaluate the degree of satisfaction of the objectives set for this project. The **main objective** of our project is:

- To design a teaching guide, with associated display materials, which the guiding theme will be the necessary complement of aggregate extraction, biodiversity management and the subsequent recovery of the gravel pits, as natural areas with social and ecological value.

This goal has been achieved with a high degree of satisfaction and has been one of the main axes executed throughout this project. The material has been created and tested with promising educational potential, in line with the social and environmental responsibility of **Hanson Heidelberg CementGroup**.

The **specific objectives** we set for our project are:

- To combine the theoretical and practical knowledge that provides a gravel pit about the origin and real applications of aggregates and restoration of quarrying areas, resulting in teaching materials for school.
- To raise awareness of the importance of carrying out active management of biodiversity associated with the restoration of areas degraded by the extraction of aggregates.
- To make known to the population, through the learners acting as vectors, the positive, real and present effects on our society of the aggregates sector, properly sizing their impacts and providing visibility to the commitment and the sustainable actions of the aspects of the company.

We believe that the material developed is in line with the fulfilment of these setting objects. The proposed activities to fulfil these objectives are achievable by any school or teaching group, thereby enhancing the search experience and information for the formation and maturity of the students

It requires dissemination and visibility of the material available to any national school and even European centre through internet tools and communication and outreach work by **Hanson Heidelberg CementGroup** to actively promote the use of these teaching materials.

#### Addresses of the project

The information material is strategically outlined to address more than one social group. Although it is aimed at students aged between **8 and 12 years** old who attend the last years of Primary school and early Secondary school. The transmission has to reach the rest of the population through the role of **vectors** which are the students. The **multiplier effect** to the rest of **society** must begin through them.

The material must be discovered and worked through the teaching of **schools**, who know the need to give importance through cross subject to Environmental Education. It will be them who are to be the sharers and sensitize the students to publicize this industry and environmental restoration work.

To achieve this, this didactic material is offered to education and training centres. The quality material is updated for the **digital age**, and directed to students familiar with new technology through digital devices. This offers the ability to explore and experiment with some **really outstanding and innovative materials**, so far not developed in this industry in Spain.



Extrapolating this positive view and taking advantage of the natural environments of exploitations as a teaching resource, we expect families to get involved in performing them, thus making each student in a **vector transmit knowledge** about gravel pits and good environmental practices in them. The awareness of the environmental issues surrounding the exploitation of natural resources is something we do not want to shelve, also showing how to mitigate these effects.

In order to cover areas beyond school level, this educational project is complemented by a series of **6 expository banners**. This enables the creation of a **traveling exhibition**, easy handling and assembly. This material will be available for schools that want to introduce the development of this project into their teaching practices.

This exhibition material can reach all areas of the public and can be carried out in the context of other actions such as **"The Day of Trees, Aggregates and Biodiversity"** or **conferences and educational seminars** and provides a visual support to show the sustainable development which the company carries out.

#### Timing

	April	May	June	July	August	September
Tasks	Study and documentation	Design of contents and texts of the material	Graphic design and layout of the exhibition.	Dissemination and distribution	Assesment of the results	Preparation of the final report

This project has been developed on the schedule deadlines initially planned. The work of dissemination, distribution and printing of the expository banners were tasks that **Hanson Heidelberg CementGroup** developed on their own, so that work was out of the responsibilities assumed by the project.

The study, documentation, design of materials and layout has been the main body of work. The graphic design has been done by **CMASC Publicidad**.

It should be noted that, at the meeting with the jury on 12th September at the headquarters of **Hanson Heidelberg CementGroup** in Madrid, an extension of the teaching materials was proposed. Being unusual, its design and layout were outside the deadline, but it will be presented within the deadline specified.

## Methodology

The working methodology was simple, with few people involved in the project. The sequence and division of the tasks is fixed in the following table, as well as people responsible for each stage of the process.

Tasks	People Responsibles
1. Documentation, collection of bibliographic and graphic material.	Miguel Martín Daniel Calvo
2. Design of education material *	
3. Review of the material	
4. Translation (If required)	Susana Zurrunero (selfless collaboration)
5. Graphic design and layout	CMASC Publicidad
6. Review of materials designed	Miguel y Daniel
7. IT support, files which can be modify and creation of copies.	CMASC Publicidad
8. Preparing the final report	Miguel y Daniel
* The extra material, created due to the meeting with the jury, has followed the same process of creating that the rest of materials designed	

## Budget justification

Hereafter, we can see the executed budget.

TEACHING GUIDE: Concept	Price (VAT included)
Documentation, instructional design and preparation of texts.	€ 2,000.00
Design, illustration and layout (70 pages + front page)	€ 3,300.00
Photographs (Transfer included) <i>(it does not included photographs provided by Hanson Heidelberg CementGroup)</i>	€ 200.00
Preparation of computer data for mini CDs	€ 520.00
Duplicate data +mini cd + little box + front page printing one side of the page	€ 135.00
<b>Subtotal</b>	<b>€ 6,755.00</b>
EXHIBITION: Concept	Price (VAT included))
Poster design for the exhibition	288.00 €/Unit
<b>Subtotal (6 posters)</b>	<b>€ 1,728.00</b>
<b>ENHANCEMENT TO THE PROJECT:</b> Educational design, elaboration of texts and graphic design <b>Self-Guided Tour of the Countryside</b>	€600.00
<b>TOTAL PROJECT</b>	<b>€ 8,483.00</b>

### Enhancements to the project

With this budget, we have executed the entire project, including a special request of the jury, received at the meeting held on the 12th September at the headquarters of **Hanson Heidelberg CementGroup**.

The extra documentation elaborated has been a **Self-Guided Tour of the Countryside** for teachers, designed for a **visit to any gravel pit operated under phreatic level**. It is available in the annex to this document and whose structure is as follows:

- Front page and introduction
- Contents: itinerary to be made in the gravel pit crossing the four phases of the exploitation along with a description of each one: extraction area, treatment area, area in restoration and restored area after a 15-year period of ecological succession.
- Back page: safety standards and recommendations in order to respect the environment.

Due to the fact that this brochure is perfectly complemented by the educational project, we have made a budget adjustment, to cover the generated expenditure, which we consider necessary to achieve the main purpose of the project.

We would like to conclude that the budgeted amounts have been able to assume all costs, adjusting the maximum to achieve quality and efficiency required.

### Added value

Without any doubt, the developed materials have a huge potential, giving the company a distinguishing element to society, customers, administration and the rest of the industry.

In the current historical moment, society demands commitments from companies about the environment. We are sure that **communication** and **education** are the **main strategic plans** to publish all these responsibilities acquired. Communication gives easily the corporate image of company's engagement with the natural and social environment.

Making visible new exploitations with a positive image, showing the **revitalization local economy** and the **protection and enhancement of the landscape**, they are more than beneficial aspects to the possible harmful effects generated in the environment.

On the other hand, the visibility of these environmental standards which guides our production also improves costumer's vision about our company and gives **added value** to our product. This means that **Hanson Heidelberg CementGroup's** products acquire a **distinguishing element** in competitiveness with the rest of the competition in the sector.

With regard to the **administration**, a company which is worried about supporting these environmental projects has a better image and greater support when it collaborates with exploitations. It will be aware of the social and environmental importance that the business will have in the region.

With the implementation of the materials in schools through the dissemination of **Hanson Heidelberg CementGroup**, a new real and educational line within its Corporate Social Responsibility program is included. Nothing better to demonstrate this fact that an educational project, purely aimed at the population, non-profit involved, exhibiting the ethical and social responsibilities acquired.

With regard to the **industrial fabric**, the material of the exhibition presents an excellent opportunity to show in a visual and attractive way the quarrying and processing activities. Both in aggregate congresses, with national or international character. In this way, this will bring to light the biodiversity actions carried out by this company.

The creation of this material, pioneer in terms of thematic worked in education, places **Hanson Heidelberg CementGroup** as an innovative company within the industry and places it as a model in order to build a sustainable future. It means a step forward in the environmental commitment, and this project becomes a very exciting and ambitious step, because it is for the education of future generations. Reaching young people with our example should be a challenge that excites us, translating this into foster responsible consciences in their relations with the environment.

This project has great potential to **improve society**. As already stated at the **Rio Earth Summit in 1991**, the **Environmental Education** should serve as a transformative process to create sustainable societies. It is through education as society evolves and sets its decision criteria beyond the purely economic.

The econocentric parameters, on which we have relied, in recent decades, have made us put the economic value ahead of any other and they have led us to environmental problems to which we face today. Through education, we seek to reverse these values. Through this reversal of values, we will achieve societies in which, their individuals will have healthier and more responsible habits in their relationships with nature and with others, resulting in a more empowered society.

With this didactic material, we go deep into the knowledge of these preserved habitats formed in the restored gravel pits and we generate a respect for these territories. We **understand their importance**, as **unique ecosystems** and **ecological corridors**, restoring identity to the landscape. Therefore, we seek to prevent past mistakes from being repeated and these ecosystems do not end up deteriorating. In general terms, we encourage that the

conservation of biodiversity and landscapes around us are also, the preservation of the human species.

### Replicability

The potential and the benefits of this project cannot stay only in Spain. **Hanson Heidelberg CementGroup** must extrapolate this work to other territories. For this purpose, the material is available to be adapted and replicated **in other countries with another language, other landscapes and other educational systems**. The objectives of the project are the same in a gravel pit in Spain or in any other country. The need to make **Hanson Heidelberg CementGroup** known as a responsible entity, committed to the world in order to improve society and make progress in the sustainable commitment.

Associated exposure is not limited to the gravel pit study. This content is **a visual and attractive explanation of the extraction process and the complete restoration of the land**. It is offered to be the **axis of any interpretive reporting on the sector and the restoration of degraded areas**. Besides, for the entire industry as a whole, not just schools. A traveling exhibition has a **very high ability to reach a large part of society**. Furthermore, as it is focused on good environmental practices carried out by the aggregate industry will serve to **dignify the image** of the industry and position itself as a necessary economic activity for society. It will raise awareness about responsible management to be performed on the 2nd natural resource most consumed in the world.

Edited teaching resources will be available in physical digital media to be spread to schools which request it. Besides, it will be possible to download it from Internet platforms both will serve as educational support for teachers and it will be in the websites of **Hanson Heidelberg CementGroup**. From the moment in which these materials are circulating on the Internet as well as from the time when teachers begin to use the material, visibility of the business group will become clear, both its image and its line of social responsibility. Nowadays, transmissibility through digital media, as well as orally through schools will be enough to achieve the objective of the edited material

### Possible short-term actions

The implementation of our educational project is divided into two actions: on the one hand, there are the purely educational materials for schools and on other hand the traveling exhibition.

The educational project, together with the Self-Guided Tour of the Countryside for visits, will be given on physical support (mini CDs) so they are already prepared to be offered to

teachers who want to implement this project. The distribution of the material will be carried out in two ways: the mini CDs or from the free access and download on the website of **Hanson Heidelberg CementGroup**. Technological resources available in our digital era favour the use and distribution of teaching materials.

The implementation of this material will be possible from next school year, taking into account the school planning leading educational programme. This question would be supported by corresponding school visits to exploitations managed by **Hanson Heidelberg CementGroup**. These visits will be coordinate by the entity.

A **strategic plan** should be encouraged and carry out by city councils and teacher training centres in order to **bring visible the restoration of degraded areas**. In it, a field trip to an exploitation will be included, where the teacher with the support of the countryside guide, the exhibition and the essential exploration of the land, the treatment plant and the restored areas, could offer a complete overview of the process to the students. All this will be completed with didactic guide in physical support as a gift.

The exhibition should be spread as a pioneer example in environmental education materials on this aspect in educational sessions or the environmental and/or aggregate sector. For examples, in conferences, in interpretation centres at the national level, in regional and local administrations, and in celebrations of international days: **World Habitat Day** (first Monday of October), **International Day for Biological Diversity** (22<sup>nd</sup> May) or **Trees, Aggregates and Biodiversity Day** (17<sup>th</sup> March).

#### Future lines of action

Given the size of the quarrying sector, as well as the potential educational resource which provides a gravel pit itself, we offer to **Hanson Heidelberg CementGroup** some possible action points to provide continuity and support to the project started with this work.

- **To adapt materials** to any gravel pit which has similar characteristics to Cistérniga, increasing the radius of action of communication and educational actions promoted. We do not limit just to Spain, similar educational concerns exist anywhere in the world whose way of exploiting the aggregates is similar.
- We defend a **strategic communication and distribution campaign**. This will achieve to show all opportunities opened due to this work. The target audience would be anyone who has some influence on the educational communities (not only schools) in the surrounding gravel pits territories whose characteristics are adapted to implement educational plans based on these teaching materials.
- The main target group of this project is the teacher group, given the natural difficulties of the human being when it refers to accept major changes in their routines. We stand for **conferences of dissemination materials and teacher training** in order to alleviate any fears which always bring changes and developments, if they are perceived as a threat.

- To maintain flexibility and adaptability of the designed materials, we propose future action as **the complete translation of materials into other languages**, to be consistent with the current situation in which bilingualism is an important value in the educational activity.
- Restoration in gravel pits provides a lot of opportunities and an educational potential. From our point of view, taking the gravel pit as the main eco-educational resource, it can be **expand these materials** to work in more specific educational content of the ecosystem. To give some examples: physics, mathematics, chemistry, flora, fauna, landscape, spatial orientation, means of transport, advertising, recycling, energy, plastic arts, etc. We believe that expanding the educational project with materials which work on more training areas can continue to conceive visibility of the sector not known so far, in particular, by the Spanish population.
- To produce an **educational video**, in an audio-visual and adapted form, showing the processes which occur in an aggregate exploitation. From the first extractions to final restoration, with the actions taking place throughout the process, including the ones generating a wealth of biodiversity. This will serve as a presentation and support material to different disclosures.

### Final conclusions

The quote of the poet Baba Dioum "*In the end, we will conserve only what we love. We will love only what we understand. We will understand only what we are taught*" which appears in our project, or "*make the invisible visible*" which seems a topic more, are the ideas on which we base our educational task.

From the outset, we wanted to shape a largely hidden reality for a big part of the society, and to remove it from anonymity. Negative arguments or not generated by the society, in general, are given by the lack of knowledge about the work carried out by the business aggregate sector. There are countless positive arguments from the industry. The resource itself is a favourable argument. This project is born in order to achieve a point of agreement, union and positive coexistence between both sides. We hope to have contributed with this sand grain the company and to society.

Last but not least, we would like to thank **Hanson Heidelberg CementGroup** and the organization of **Quarry Life Award** for giving us the opportunity to create this educational material, which will hopefully give a return, beyond economics, contributing to the learning and increasing awareness in the addressee. This applies both for the conservation of natural areas; whether they were degraded and require restoration and management of biodiversity, and for those whose ecosystem origin is kept. Showing the ethical, social and environmental



commitment is an important task, and we provide valuable tools to achieve it through work carried out.





To be kept and filled in at the end of your report

**Project tags (select all appropriate):**

This will be use to classify your project in the project archive (that is also available online)

**Project focus:**

- ☐ Biodiversity management
- ☐ Cooperation programmes
- ☒ Education and Raising awareness
- ☐ Endangered and protected species
- ☐ Invasive species
- ☐ Landscape management - rehabilitation
- ☐ Rehabilitation
- ☐ Scientific research
- ☐ Soil management
- ☐ Urban ecology
- ☐ Water management

**Flora:**

- ☒ Conifers and cycads
- ☒ Ferns
- ☒ Flowering plants
- ☐ Fungi
- ☐ Mosses and liverworts

**Fauna:**

- ☒ Amphibians
- ☒ Birds
- ☒ Dragonflies & Butterflies
- ☒ Fish
- ☒ Mammals
- ☒ Reptiles
- ☒ Spiders
- ☒ Other insects
- ☒ Other species

**Habitat:**

- ☐ Cave
- ☐ Cliffs
- ☒ Fields - crops/culture
- ☒ Forest
- ☒ Grassland
- ☒ Human settlement
- ☒ Open areas of rocky grounds
- ☒ Recreational areas
- ☐ Scree
- ☒ Shrubs & groves
- ☒ Soil
- ☐ Water biotopes
- ☒ Water bodies (flowing, standing)
- ☒ Wetland

**Stakeholders:**

- ☒ Authorities
- ☒ Local community
- ☒ NGOs
- ☒ Schools
- ☒ Universities

## Photographic annex





### Inside a Self-Guided Tour of the Countryside



### Devolviendo responsabilidad

1. Tras el trabajo, el terreno se deja en estado natural, con la vegetación que quedara y se reforestan con especies nativas. Se evita el uso de maquinaria pesada que dañe el suelo.

2. Se reforestan con especies nativas, evitando el uso de especies exóticas que puedan dañar el ecosistema.

3. Se evita el uso de maquinaria pesada que dañe el suelo.

4. Se evita el uso de maquinaria pesada que dañe el suelo.

Hanson HEIDELBERGCEMENT Group

### ¿Qué son y para qué se utilizan los áridos?

Y, aunque te parezca difícil de creer, éstos y otros son los usos a los que se destinan en nuestra vida cotidiana:

<b>CARRETERAS</b> El uso principal de los áridos es en la construcción de carreteras, donde se utilizan para la base y el subbase de las carreteras.	<b>ALIMENTACIÓN</b> Se utilizan en la fabricación de alimentos, como en la producción de azúcar y en la fabricación de productos de panadería.
<b>COSMÉTICA</b> Se utilizan en la fabricación de cosméticos, como en la producción de cremas y en la fabricación de productos de maquillaje.	<b>INDUSTRIA</b> Se utilizan en la fabricación de productos industriales, como en la producción de cemento y en la fabricación de productos de construcción.
<b>DEPURAR AGUAS</b> Se utilizan en la depuración de aguas, como en la producción de agua potable y en la depuración de aguas residuales.	<b>NEUMÁTICOS</b> Se utilizan en la fabricación de neumáticos, como en la producción de neumáticos para camiones y en la fabricación de neumáticos para coches.
<b>VIDRIO</b> Se utilizan en la fabricación de vidrio, como en la producción de vidrio para ventanas y en la fabricación de vidrio para botellas.	<b>FARMACÉUTICA</b> Se utilizan en la fabricación de productos farmacéuticos, como en la producción de medicamentos y en la fabricación de productos de higiene.

Hanson HEIDELBERGCEMENT Group

### Construyendo oportunidades

1. Se reforestan con especies nativas, evitando el uso de especies exóticas que puedan dañar el ecosistema.

2. Se evita el uso de maquinaria pesada que dañe el suelo.

3. Se evita el uso de maquinaria pesada que dañe el suelo.

4. Se evita el uso de maquinaria pesada que dañe el suelo.

5. Se evita el uso de maquinaria pesada que dañe el suelo.

Hanson HEIDELBERGCEMENT Group

### Flora característica del humedal

1. **CHENOPODIO**: Planta de hoja pequeña, con flores amarillas.

2. **ESPAÑOLA**: Planta de hoja grande, con flores blancas.

3. **ALUFA**: Planta de hoja grande, con flores blancas.

4. **CHENOPODIO**: Planta de hoja pequeña, con flores amarillas.

5. **ESPAÑOLA**: Planta de hoja grande, con flores blancas.

6. **ALUFA**: Planta de hoja grande, con flores blancas.

Hanson HEIDELBERGCEMENT Group

### Fauna característica del humedal

1. **CHENOPODIO**: Planta de hoja pequeña, con flores amarillas.

2. **ESPAÑOLA**: Planta de hoja grande, con flores blancas.

3. **ALUFA**: Planta de hoja grande, con flores blancas.

4. **CHENOPODIO**: Planta de hoja pequeña, con flores amarillas.

5. **ESPAÑOLA**: Planta de hoja grande, con flores blancas.

6. **ALUFA**: Planta de hoja grande, con flores blancas.

Hanson HEIDELBERGCEMENT Group

### Tendamos la mano a la biodiversidad

1. **CHENOPODIO**: Planta de hoja pequeña, con flores amarillas.

2. **ESPAÑOLA**: Planta de hoja grande, con flores blancas.

3. **ALUFA**: Planta de hoja grande, con flores blancas.

4. **CHENOPODIO**: Planta de hoja pequeña, con flores amarillas.

5. **ESPAÑOLA**: Planta de hoja grande, con flores blancas.

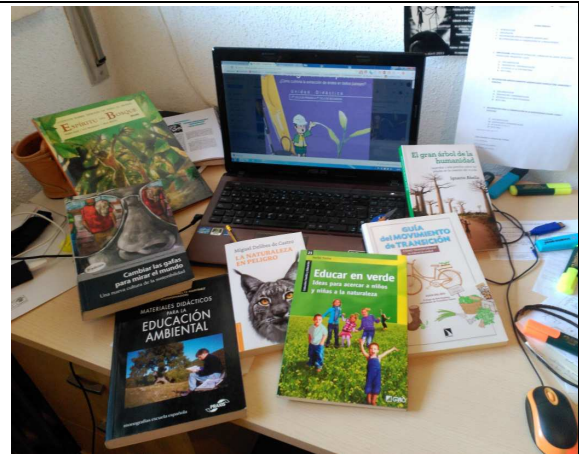
6. **ALUFA**: Planta de hoja grande, con flores blancas.

Hanson HEIDELBERGCEMENT Group

Travelling exhibition.



Previus visits to Cisterniga to see the gravel pit and wetland.



Preparation of the content for teaching material: Office work and field work



