

Sustainable raw materials management in the Iberian
Peninsula: the role of industry and consumers

*Somincor and the Neves-Corvo mine: Mining for a
better future*

COBALT Dialogue

Madrid, June 12 2014

Sequence of the presentation

- ❑ Somincor and the Neves-Corvo mine.
- ❑ Innovation.
- ❑ Socio-economic impact.
- ❑ Social commitment.
- ❑ Raw materials commitments.

Somincor and the Neves-Corvo mine

lundin mining



Mine overview

Somincor and the Neves-Corvo mine

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- ❑ 1977 – Discovery of Neves-Corvo (Castro Verde County) deposits with high levels of copper.
- ❑ 1980 – Somincor setting up (51% State owned through the current EDM & 49% French joint venture Peñarroya+BRGM).
- ❑ 1985 – French shareholders sell their 49% to Rio Tinto Group.
- ❑ 1988 – Opened by Portuguese PM. Total capital costs of \$343 million.
- ❑ 1992 – Construction by Somincor (in partnership with CP) of the railway track which connects Ourique to Neves-Corvo.
- ❑ 2004 – Acquired by EuroZinc.
- ❑ 2006 – Acquired by Lundin Mining through merger with EuroZinc.
- ❑ 2010 – Discovery of new massive sulphide deposit named “Semblana”.
- ❑ 2011 – Opening of the paste deposition deposit at Barragem do Cerro do Lobo; an innovative project in sulphide mines.

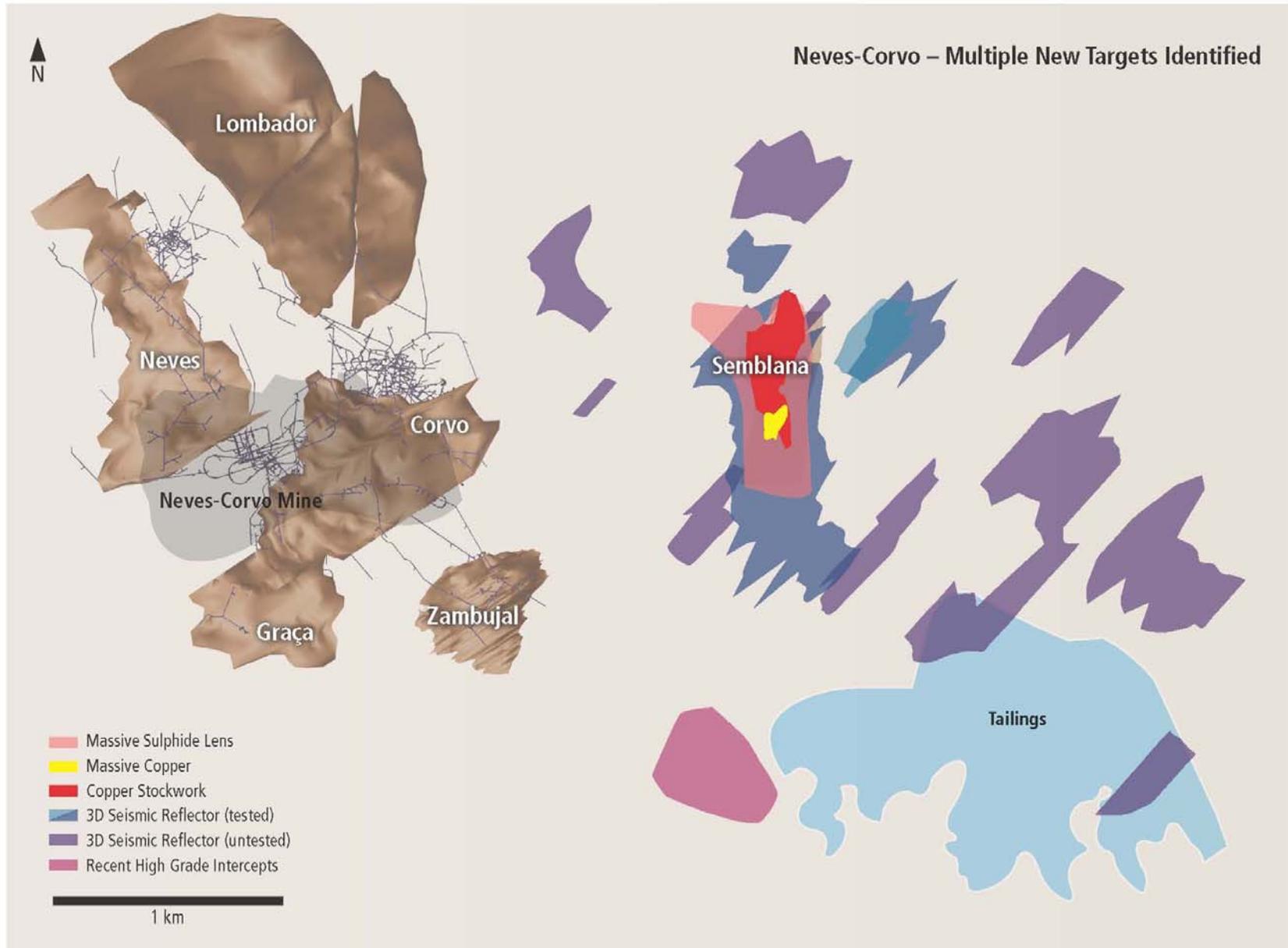
Somincor and the Neves-Corvo mine

- ❑ Somincor is a subsidiary of Lundin Mining, a diversified base metals mining company with operations and projects in Portugal, Sweden, Spain and the U.S.A.
- ❑ The company was incorporated in July 1980 with the main goal of exploration, extraction, processing and selling copper, tin and other metal ore concentrates, after the discovery of deposits of Neves-Corvo; the exploitation of copper ore started in 1989 and tin ore in 1990; the exploitation of tin ore ended in 2005; the exploitation of zinc ore started in 2006.
- ❑ Somincor develops its activity under a concession agreement with the Portuguese State granting an area of 13,5 Km², called Neves-Corvo, to exploit mineral deposits of copper, zinc, lead, silver, gold, tin and cobalt, for an initial period of 50 years, renewable for two further periods of 20 years.

Somincor and the Neves-Corvo mine

- ❑ The Neves-Corvo Mine is located in Baixo (Lower) Alentejo, on the south edge of the Iberian Pyrite Belt.
- ❑ Surface exploration drilling near the Neves-Corvo mine has discovered a sixth deposit, Semblana, to add to the Neves, Corvo, Graça, Zambujal and Lombador sulphide deposits.
- ❑ Each of these original five massive sulphide deposits hosts one or more copper zinc orebodies and the discovery of a sixth massive sulphide deposit is a significant event in the history of the mine. This new deposit is located only 1.3km northeast of the Zambujal orebody in an area which has not been previously drilled.

Somincor and the Neves-Corvo mine



Somincor and the Neves-Corvo mine

- ❑ Somincor is one of the associates from ANIET, an association founded in 1975 with associates in all three subsectors of the extractive and transforming industry: mines (the concessionaires of the two biggest Portuguese mines of Panasqueira and Neves-Corvo, the public company EDM, Solvay, CUF, ...), industrial rocks (Cimpor, Secil, Mota Engil, ...) and ornamental rocks (Real Granito, Sociedade das Pedreiras do Marco, ...).
- ❑ ANIET has also as associates companies related to the extractive and transforming sector, *inter alia* in the area of equipments and explosives (Maxam, Orica, Metso Minerals, Atlas Copco, ...).
- ❑ ANIET has been committed to provide support to its associates, present concrete proposals to the Government to solve some of the issues that affect the sector the most and through Euromines and UEPG participate in the discussion of said matters at EU level.



Cerro do Lobo thickened tailings dam

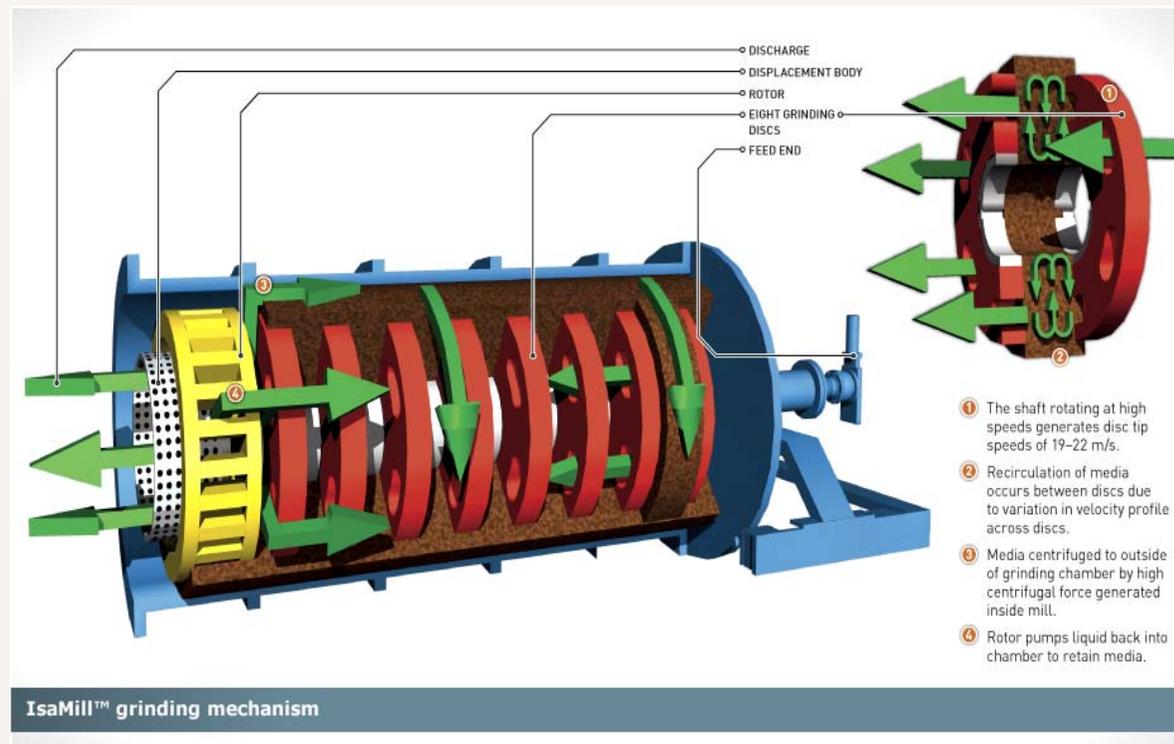
Thickened tailings deposition

- ❑ For the first time in Europe, paste from high sulphide tailings is produced and prepared for sub-aerial disposal, switching from sub-aqueous disposal in a dry climate in an unlined site.
- ❑ Also, for the first time, depositional “cells” are being created to concomitantly store paste and acid generating waste rock. This allows for progressive filling and closure of the Cerro do Lobo tailings and mine waste rock facilities. The cover is designed to maintain high saturation levels and reduce high generation source.



Ultra fine grinding

- Since 2009, the installation of the Isamill grinding machine at the tailings circuit of the Neves-Corvo mine copper plant has enabled (i) copper recovery initially of 10 t/day and currently of 45 t/day (in an approximate value of € 25,000,000) and (ii) production of zinc concentrate at the copper plant.



Socio-economic impact

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Contribution to the national economy

- ❑ Somincor is one of the 10 major Portuguese export companies: in 2013, the company was responsible for outflows (shipments + exports) of around EUR 315,7 Million, representing about 86% of the total national output of metal ores.
- ❑ The company sells 100% of its production to external partners.

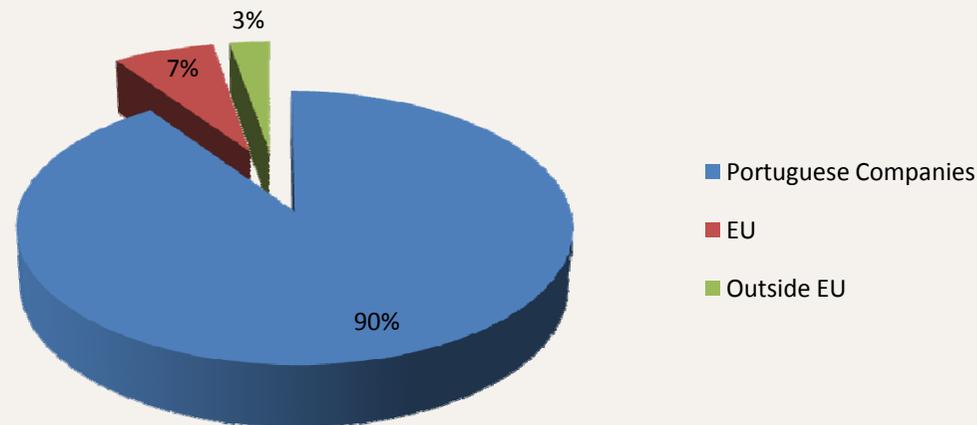


Trains to Setúbal with concentrate and back to the mine with Sand (now totally covered)



Setúbal Port

- For the development of its activity, Somincor acquires every year high significant volumes of goods and services from which 90% supplied by Portuguese companies, revealing a strong integration in the Portuguese business market. For example, in 2013 the purchases of goods and services reached EUR 234 Millions.

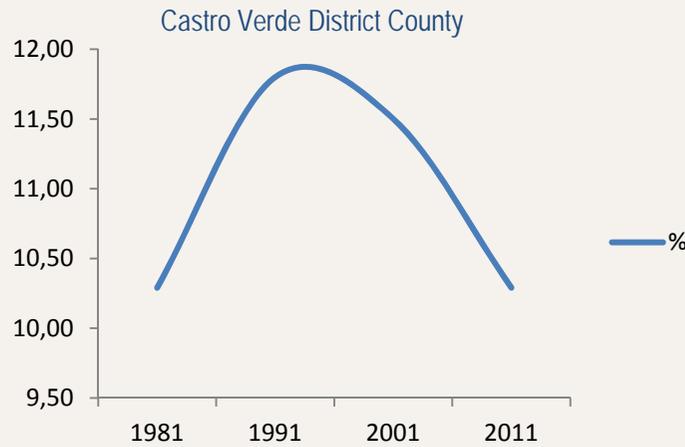


Employment

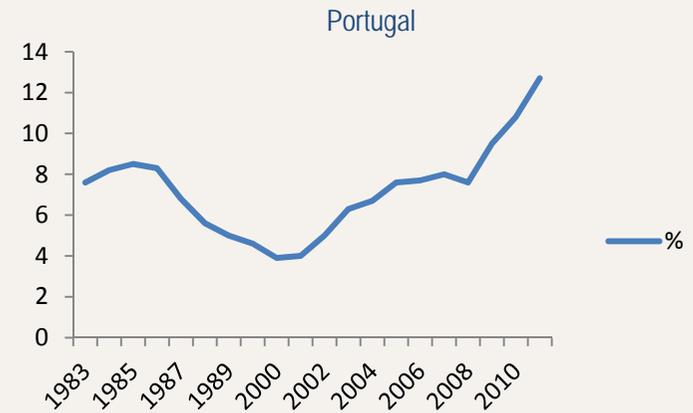
- ❑ Somincor has a key role in the employment in the Baixo Alentejo Region, mainly in the County Districts of Castro Verde, Almodôvar and Aljustrel where the company is responsible for 14,4% of the total of direct employment.
- ❑ Somincor has 989 direct employees and 1244 indirect employees.
- ❑ The Neves-Corvo mine has contributed to a low unemployment rate and a high average salary in the Castro Verde county in comparison with the national figures.

Socio-economic impact

Unemployment

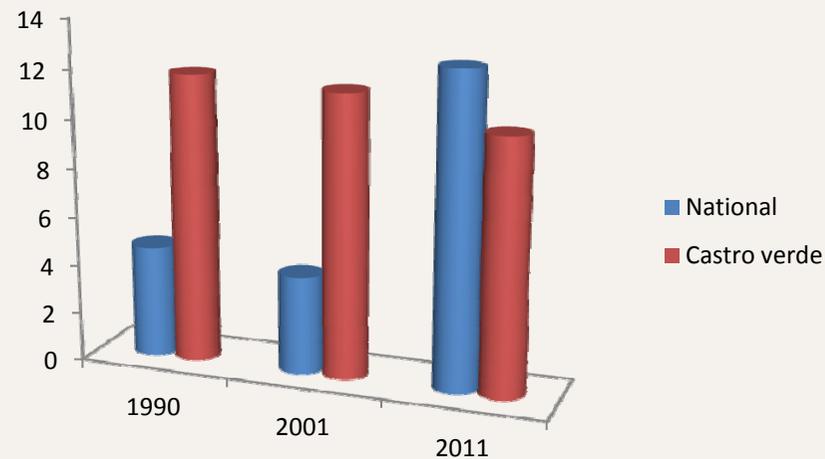


Source: Castro Verde City Hall



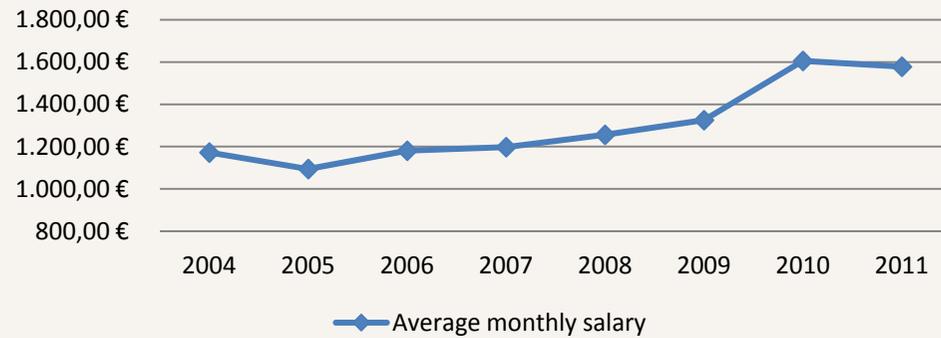
Source: PORDATA

Portugal and Castro Verde



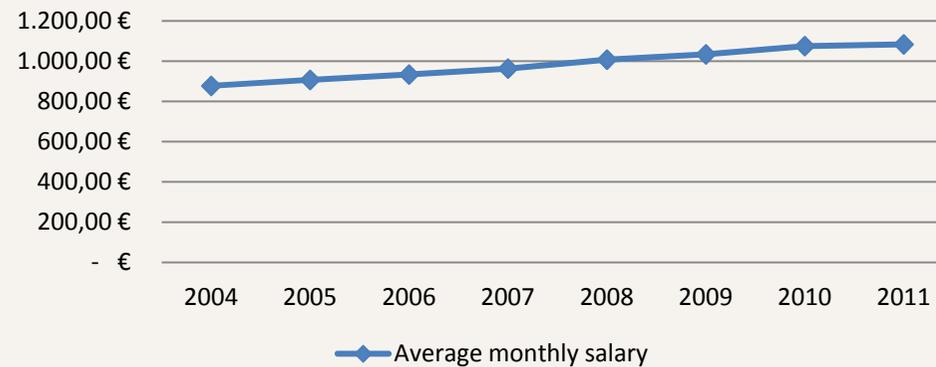
Socio-economic impact

Average salary in the County of Castro Verde



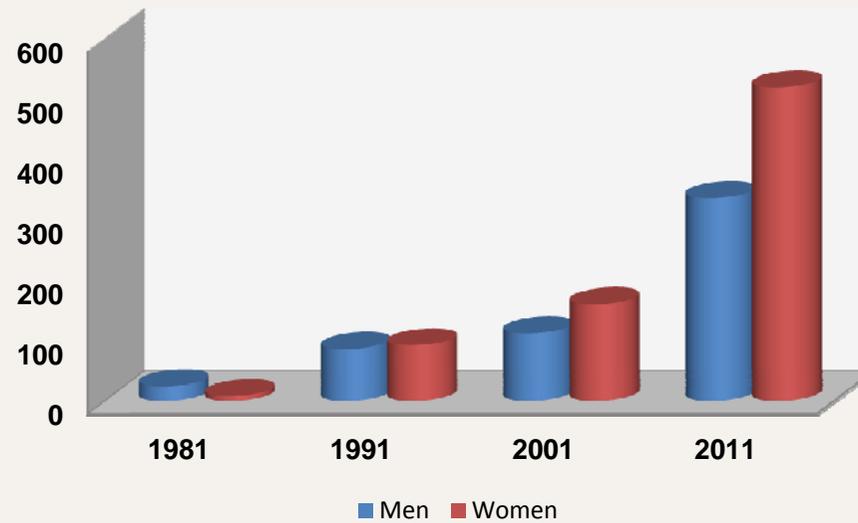
Source: Castro Verde City Hall

Average monthly salary in Portugal



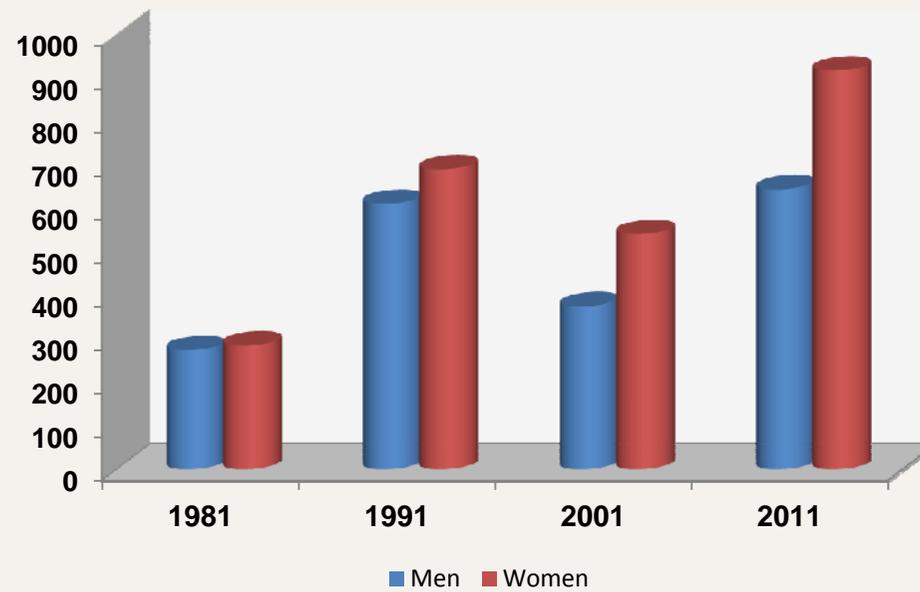
Source: PORDATA

Higher education in Castro Verde



Source: Castro Verde City Hall

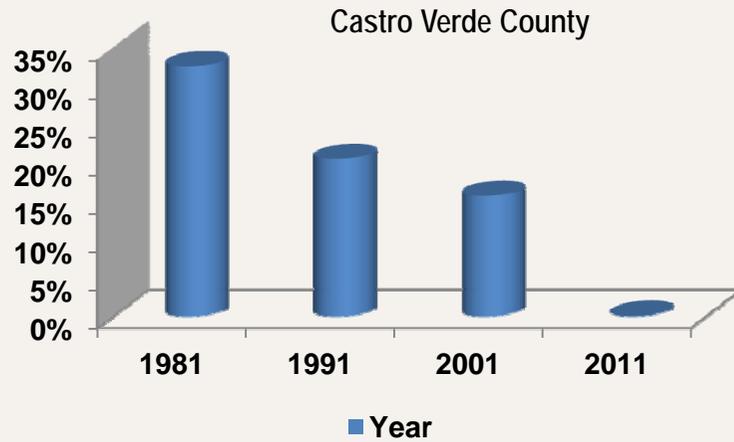
Medium education in Castro Verde



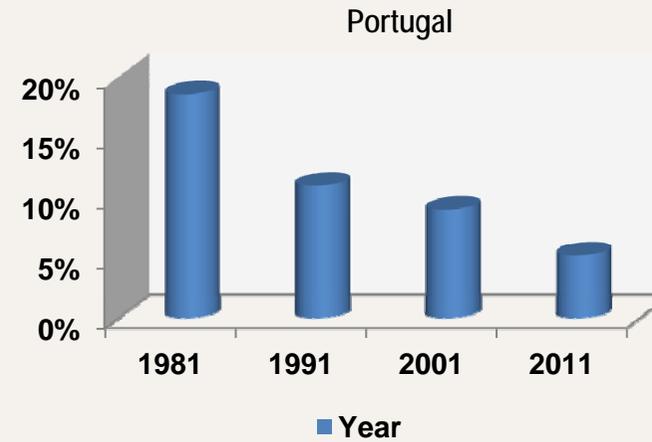
Source: Castro Verde City Hall

Socio-economic impact

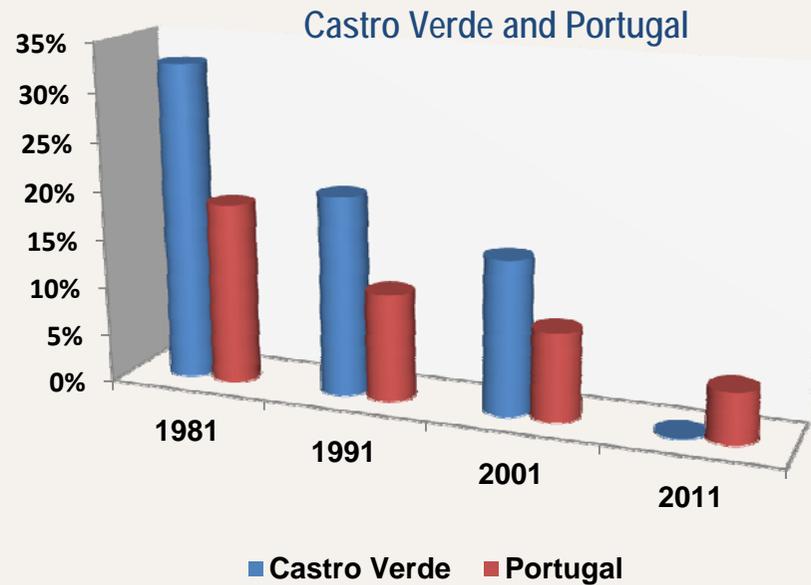
Illiteracy rate



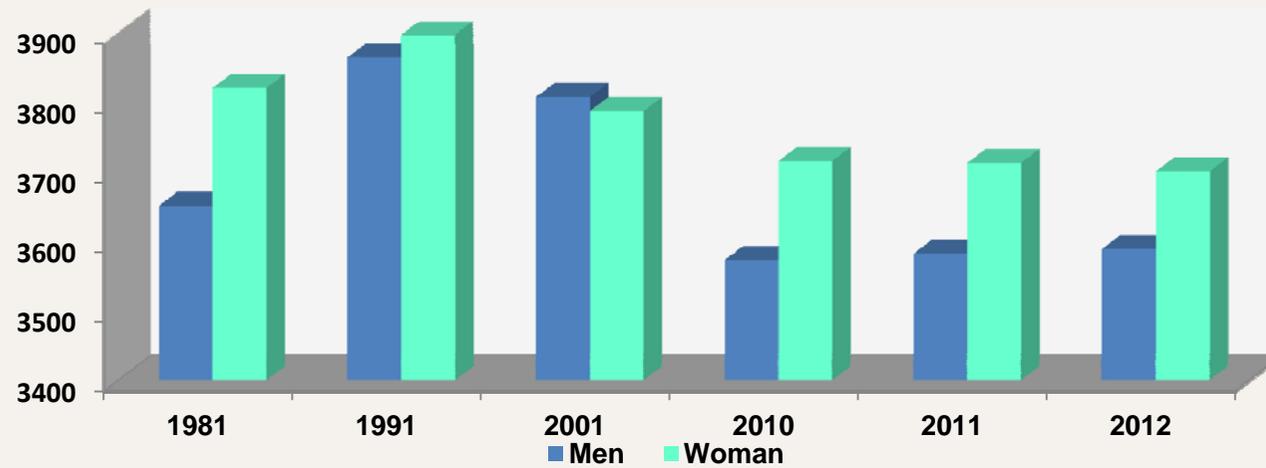
Source: Castro Verde City Hall



Source: PORDATA



Evolution of resident population



Source: Castro Verde City Hall

Somincor contributes to the development of the local community with:

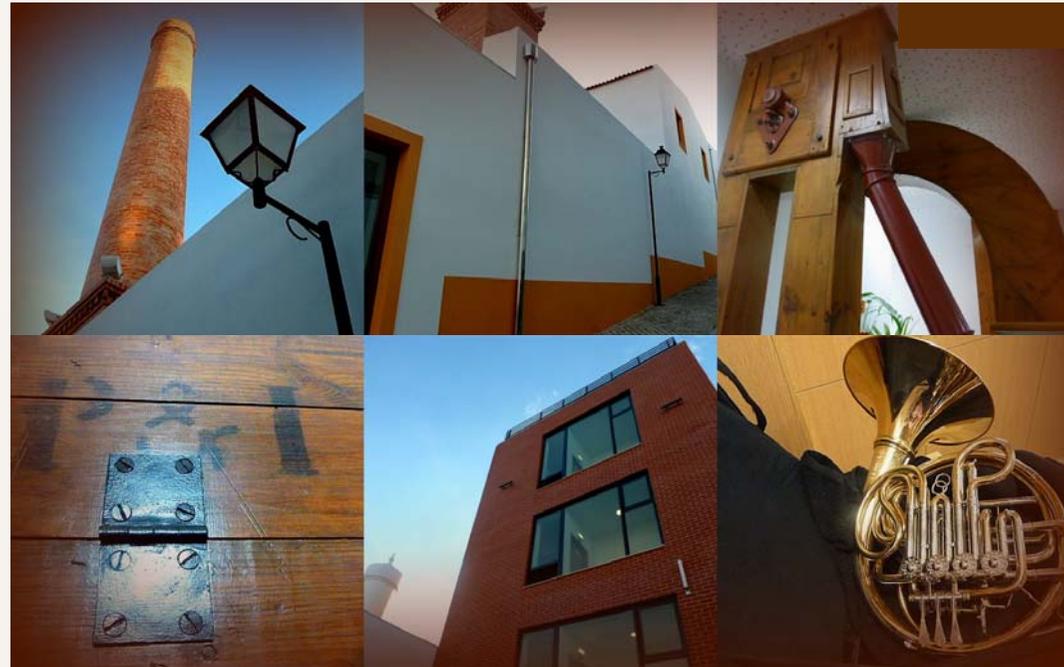
- ❑ Partnerships in education and training;
- ❑ Cultural and social patronage such as the refurbishment of the Castro Verde Saint Peters Basilica;
- ❑ Promotion of cultural, sports and associative activities in the County;
- ❑ Social projects in a community context to fight suicide and loneliness, creating sustainable alternatives with social inclusion;
- ❑ Financial support to the Music Conservatory of the Baixo Alentejo region particularly for youngsters;
- ❑ Protocols with associations for instance to promote and support the practice of riding as well as therapies for children with physical and mental disabilities.

Social Commitment

Saint Peters Basilica



Music Conservatory of the Baixo Alentejo



Social Commitment

- ❑ Somincor has in its area of influence two areas in the Natura 2000:
 - ❑ PTZPE0046 Castro Verde special protection area and
 - ❑ PTZPE0047 Guadiana Valley Special protection area.

- ❑ The first study of biodiversity in the Neves-Corvo region was conducted by the company from 1982 to 1984.

- ❑ Somincor maintains since 1990 an asset biodiversity monitoring program, with annual work carried out by teams of biologists from the Universities of Coimbra and Lisbon.



Social Commitment

- ❑ Since 2008, Somincor has a protocol with ICNB - Institute of Nature Conservation and Biodiversity in order to reduce biodiversity loss.
- ❑ In 2011, the report synthesis of the whole activity of Somincor - "Biodiversity in the area of influence of Neves-Corvo mine, 1982 -2010" was published.
- ❑ The "Field Guide of the Neves-Corvo Region - A Mine of Biodiversity" was published in June 2013 by the Universities of Coimbra and Lisbon sponsored by Somincor.
- ❑ The film "O Cante da Terra" produced by Daniel Pinheiro and sponsored by Somincor was on the Portuguese television channel SIC.



- ❑ Somincor supports 2 projects of development and protection of the biodiversity in the Neves-Corvo region:
 - ❑ In Mértola, with the “Vale do Guadiana” Natural Park, the construction of an ichthyology centre for the development of indigenous species from the Guadiana river.
 - ❑ In Castro Verde, with the Nature Protection League (Portuguese NGO), for the protection of steppe birds.



Raw materials commitments - Kandandu

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Raw materials commitments - Kandandu

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Universidade
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Natural Resources GP

Objectives

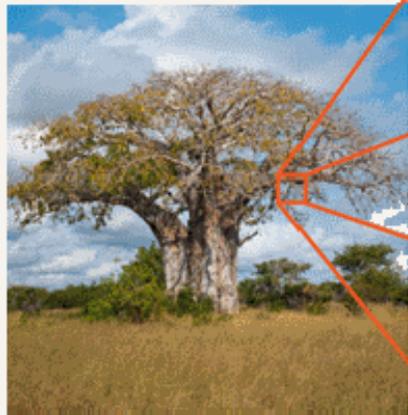
- ❑ Form bridges among different stakeholders in the extractive industry and foster balanced partnerships that will benefit all parties involved based on common language and shared culture;
- ❑ Stimulate and enhance cooperation between researchers from the EU, Africa and Latin America;
- ❑ Promote opportunities offered by the EU to international partners;
- ❑ Divulge best practices of the extractive industry and opportunities;
- ❑ Offer training and education related to the extractive industry to students and professionals from the EU, Africa and Latin America;
- ❑ Prepare a memorandum to promote cooperation with regard to research between EU, African and Latin American countries.

Activities

- ❑ Creation of a website and a platform with discussions on issues related to the extractive industry;
- ❑ Newsletter in e-bulletin format to be published four times a year;
- ❑ Seminars to be held at Brussels;
- ❑ Meetings with partner countries with high level representatives of African and Latin American countries;
- ❑ Workshops with African and Latin American delegates at target country;
- ❑ Financial support to exchange programs and cadastre of EU alumni.

Graphic identity

- ❑ The “Imbondeiro” is a millennial tree with many resources for the human being. It provides raw materials, food, health and shelter.
- ❑ Its flower, with a rare and incomparable beauty, represents the cycle of life. It’s a link between all living things, the landmark of the perfect symbiosis between man, nature and animal world.
- ❑ It is this flower which inspired the graphic identity of Kandandu: the grand fraternal embrace that connects all living things.



Raw materials commitments - Kandandu

lundin mining

Mock website

The mock website features a navigation bar with the following items: Companies & Products, Environment and Future, Recruitment and Training, Success Stories, Join the Community, and language options PT and EN. The main content area includes the Kandandu logo, a headline 'We are all Kandandu, connected by Nature.', a paragraph of placeholder text, a video player titled 'Preserving heritage in biodiversity', a 'community' icon, a 'newsletter' icon, an infographic titled 'Extraction & Impact', and an article preview. A 'Join the community' button is positioned over a background image of two workers in a field. The footer contains a newsletter subscription link, a contact link, and the company name: Somincor - Sociedade Mineira de Neves-Corvo, S.A.

Kandandu

Companies & Products | Environment and Future | Recruitment and Training | Success Stories | **Join the Community** | PT EN

We are all Kandandu, connected by Nature.

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[Join the community](#)

Preserving heritage in biodiversity

community

newsletter

infographics
Extraction & Impact

Article title
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Partners

- ❑ Austria: Montanuniversitaet Leoben, MinPol
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- ❑ Ireland: ALS Group
- ❑ Netherlands: TNO, Paques
- ❑ Poland: Instytut Metali Niezelaznych, KGHM POLSKA
- ❑ Portugal: SOMINCOR, LNEG
- ❑ Serbia: Mining & Metallurgy Institute BOR, RTB BOR GROUP
- ❑ Slovakia: GA Drilling
- ❑ South Africa: MINTEK
- ❑ Spain: Cobre Las Cruces, EMED-Tartessus, Rio Narcea, Ayesa, Tecnicas Reunidas, Agq, Outotec, Universidad Polit cnica De Madrid, Maxam Europe, Inersa, Instituto Geologico Y Minero De Espa a, Atlas Copco
- ❑ Sweden: Sandvik Mining, Lule  University of Technology
- ❑ United Kingdom: Mineral Industry Research Organisation - MIRO, Datum Monitoring, Imperial College London, Cytec

Objectives

- ❑ Develop sustainable and efficient technological solutions to benefit polymetallic, complex, and low grade ores containing Cu, Zn, Pb, Ni, Au, Ag, PGE, CRM such as In, Sb, Co, and other minor elements from diverse mines located in Spain, Portugal, Poland and Serbia;
- ❑ Develop innovative technologies covering the whole value chain from exploration to metals production including re-processing of tailings and wastes;
- ❑ Develop innovative technologies to exploit difficult, small or deep deposits in the mentioned countries;
- ❑ Produce added value products including refined metals (commodities).

Activities

- ❑ New exploration technologies, innovative drilling techniques; rare/minor metals control in new mining projects;
- ❑ New mining technologies; cost and energy efficient ores extraction methods; mining automation and control; mining wastes handling optimisation;
- ❑ Mining wastes and tailings: dry stockpile techniques including paste technology improvements; by-products recovery, recycling, reuse;
- ❑ New flotation technologies to improve selectivity and concentrates quality; energy efficient comminution; more selective reagents; process automation and control;
- ❑ Innovative leaching technologies applied to polymetallic, dirty and low grade concentrates; enhanced purification, solvent extraction, and metals winning technologies;
- ❑ Mine waters and process effluents and residues, e.g. biotreatment to remove sulphates, improved membranes applications; valorisation and recovery of valuable components;
- ❑ Implementation of a pilot action on polymetallic sulphides at the Iberian Pyrite Belt.



THANK YOU