



CORK

CULTURE | NATURE | FUTURE

Cork Information Bureau 2015

CORK – ENVIRONMENTAL IMPORTANCE



CORK – ENVIRONMENTAL IMPORTANCE

Index

MONTADO.....	3
THE MONTADO'S BIODIVERSITY	3
ENVIRONMENTAL IMPACT	4
SOCIAL AND ECONOMICAL IMPACT	5
CORK OAK FORESTS AND WILDLIFE	7
SUSTAINABILITY OF THE MONTADOS.....	11
CORK FOREST AND CHAIN OF CUSTODY CERTIFICATION SYSTEMS	11
PROTECTIVE NATIONAL LEGISLATION.....	12
REFORESTATION PROGRAMS.....	13
SUSTAINABILITY OF THE CORK INDUSTRY	13



CORK – ENVIRONMENTAL IMPORTANCE

Montado

The “montado” is the Portuguese term used to describe landscapes which are a specific, delicately-balanced ecosystem, comprising of mixed farming, centred around extensive oak woodlands, interspersed by areas of shrubs, grassland and cultivated fields.

It is neither agricultural, forestry or pastoralism, but an integrated mix of all three, designed and developed over millennia to secure greatest abundance from often harsh and inhospitable conditions, ensuring the land’s productivity for future generations.

The montado can vary from thick forest to more open grassland and scrub vegetation areas interspersed by trees. The average density is approximately 80 trees per hectare, although it can be 120 trees or more, and up to 5 per cent of the total area may be used for growing cereals such as wheat, barley and oats, and 40 per cent may be used as pastures.

The main species that dominate the montados are of the genus *Quercus*, presenting large areas of holm oak (*Quercus rotundifolia*), small areas of Pyrenean oak (*Quercus pyrenaica*) and – the majority – cork oaks (*Quercus Suber* L).

The *Quercus Suber* L is a medium-sized evergreen oak that has a thick corky bark that is periodically stripped to yield commercial cork.

Cork oak forests grow from sea level up to 500 m in the humid and warm climates of the Mediterranean basin, particularly in the southern regions of the Iberian Peninsula influenced by the Atlantic Ocean.

The cork oak as a species is well suited to the Mediterranean climate, characterised by dry summers and mild winters - with temperatures ranging from -5°C to 40°C - with minimum yearly rainfall of 400 mm, maximum yearly rainfall of 1700 mm, and soil pH ranging from 4.8 to 7,0¹.

Covering a worldwide area of over 2,1 million hectares, cork forests are found in Portugal, Spain, Algeria, Morocco, Italy, Tunisia and France. Portugal represents over 30 percent of the total, with the largest areas located in the Alentejo (84 percent).

It should be noted that areas of montado have increased in recent years, from 731 thousand hectares in 2006 to 736 thousand in 2010 in Portugal. There are also a number of reforestation programmes which have given rise to an average increase of 3.3% in forest areas over the last 10 years. Over 130 thousand hectares were planted in Portugal and Spain in the last 10 to 15 years, with an approximate density of 120 to 150 cork oaks per hectare. These numbers indicate that the amount of raw material available is set to increase in the next few years.

The Montado’s biodiversity

Biodiversity can be defined as “The variety of life in all its forms, levels and combinations.

Includes ecosystem diversity, species diversity, and genetic diversity” (IUCN, UNEP and WWF, 1991).

The role and value of biodiversity and ecosystem activities have been recognised on an international scale as a valuable platform for reducing poverty and desertification and

¹ Helena Pereira – A Cortiça (2004)

CORK – ENVIRONMENTAL IMPORTANCE

promoting sustainable development. The Convention on Biological Diversity (CBD) signed by over 180 governments manifestly recognises its important role².

Cork oak landscapes have proven biodiversity, environmental and ecological value. These landscapes are one of the best examples in the Mediterranean for balancing between conservation and development for the benefit of people and nature. They sustain rich biodiversity and traditional livelihoods, provide opportunities for development in economically and socially disadvantaged areas and play a key role in ecological processes, such as water retention, soil conservation or carbon storage. (Montero and Torres, 1993).

Environmental impact

Carbon Sink

Eleven of the warmest years in the past 125 have occurred in the last 20 years, with 2005 the warmest on record. The overwhelming consensus is that this is due to emissions of greenhouse gases such as carbon dioxide (CO₂).

Warming in this century is projected to be between 1,4°C and 5,8°C. The impacts of climate change are already visible³.

It is in this field that the cork oak tree plays a vital role. In addition to producing oxygen through photosynthesis, the unique cell structure of the Cork Oak traps carbon, which contributes to global warming.

According to a recent study carried out by the School of Agronomy (ISA), in Lisbon, the montado has the capacity to retain around 6 tonnes of CO₂ per hectare each year, which in Portugal corresponds to over 4 million tonnes of CO₂ each year. Consequently, one can conclude that the Mediterranean cork forests, with an area of over 2,1 million hectares worldwide, act as a carbon sink for over 14 million tons annually.

By comparison, it takes less than 1,5 hectares of montado to compensate for the yearly carbon dioxide emissions of an average car⁴.

Given the carbon retention potential of cork, every time a consumer reaches for a natural cork sealed wine bottle there is a direct contribution to the environment. A Ctcor – Technological Centre for Cork – study indicates that by consuming 15 billion cork sealed bottles, the pollution released by 45 thousand vehicles/year (with a mileage of around 15 thousand kilometres) is retained. According to Ctcor, a vehicle releases 170g of CO₂ per kilometre whilst a single cork stopper is able to retain approximately 8 grams of CO₂ – double its own weight. In short, 118.500 tonnes of CO₂ are retained by 15 billion natural cork stoppers each year.

Luis Gil, a researcher at the Portuguese National Institute for Engineering and Industrial Technology (INETI), revealed some interesting facts. By following doctors' advice and drinking two glasses of wine a day (2,5 dl wine/day) - equal to a 0,75l bottle of wine per person in three days – a consumer purchases 122 natural cork stoppers per year. By doing this, wine drinking consumers retain 1.183,40 grams of CO₂ from the atmosphere - the equivalent to a 7 km vehicle mileage/year.

² UNEP – Biodiversidade e Erradicação da Pobreza – Maio 2007

³ climatechange.com

⁴ João Santos Pereira – Do Sobreiro à Cortiça – um sistema sustentável

CORK – ENVIRONMENTAL IMPORTANCE

Soil conservation

Cork oak trees help to conserve soil by providing protection against wind erosion and increasing the rate at which rainwater infiltrates and replenishes groundwater. Because cork oak trees intercept on average 26,7% of total precipitation⁵, they also decrease the amount of water run-off, thus preventing soil erosion.

Cork oaks supply large amounts of material which rots as humus into the upper soil.

They are able to bring a large amount of nutrients from the lower to the upper soil levels, which are otherwise inaccessible to herbaceous vegetation.

They have a high water retention capacity due to their porosity and organic content (Joffre and Rambal, 1988).

Microclimate

The treetops of the Montado create a microclimate that is less extreme in winter and summer, which allows a longer growing season for the herbaceous vegetation. Cork oak trees also reduce wind speed, which helps protecting crops.

Social and economical impact

Montados are one of the few examples of fully sustainable forestry exploitation. They are economically sustainable, due to the high market value of cork.

Despite the wide variety of cork products, it is bottle stoppers that drive the cork industry: they represent almost 70% of cork's market value.

Work in the montado is mainly seasonal and limited to the harvesting season. The number of jobs in the field of forestry exploration is estimated at 6500, but there are also thousands of indirect jobs.

Desertification prevention

Desertification – whether the result of natural causes or human misuse / neglect – is one of the most pressing problems facing humanity today. In rural areas this can only be prevented by means of sustainable land use and maintained economic viability.

Cork oaks are a fundamental tool in the fight against desertification in Portugal, with a decisive role to play in preventing soil degradation. Cork oak forests, which constitute ecologically and economically sustainable systems, serve as an important tool in preventing desertification, as they generate high levels of biodiversity; they improve the organic matter of soils (after extracting nutrients from deeper levels, they return them to the soil in the form of falling leaves, creating fertile soil); they help regulate the water cycle (by increasing the amount of organic matter in the soil, they contribute towards greater water retention, facilitating its infiltration into the soil and reducing losses by surface run-off) and halt depopulation (by acting as economically viable agroforestry systems⁶).

No other substitute product of cork can be this sustainable from the environmental perspective, taking into account the poor soil and harsh climate.

In some towns, cork is the main output that keeps these areas alive with economical and social activities. Cork not only creates wealth, but also distributes it, making these regions economically viable.

⁵ Mateos & Schnabel, 1998

⁶ World Wide Fund for Nature (WWF) - O sobreiro, uma barreira contra a desertificação (2008)

CORK – ENVIRONMENTAL IMPORTANCE

From an urban perspective, residents also rely on this unique ecosystem, both locally and from a distance, for the regulation of water and air control, small-scale agricultural production, home and personal products as well as for leisure and recreation.

Rural Activities

Some of the activities that take place in these rural landscapes in parallel to the harvesting of cork include:

1. Hunting and Fishing

Along the lakes and rivers of the Alentejo fishing is a favourite sport. One of the most common fish found in these rivers is the Black Bass (Achigã).

The forests are also sources of wild game, such as partridge and wild boar. Hunting is common, although seasonal, restricted to certain areas and regulated by laws. Hunting is not only seen as a recreational activity but also ensures continued stocks, provides another source of food and a source of employment.

2. Cattle Breeding

In the montado some farmers breed indigenous pigs, sheep, goats and cattle which graze on the open areas of grassland. The pork is salted and smoked, and the final smoked ham product provides a year-round local protein source as well as being sold internationally. Many certified European meat products from Iberia come from cattle raising in these areas. The goats, on the other hand, provide renowned fresh cheeses and the sheep cured cheeses.

3. Herbal and Medicinal Plants

Forests make a significant direct contribution to the food security of rural populations. A wide range of food sources can be found in cork oak forests including seeds, acorns, fungi (mushrooms), herbs and wild animals. Acorns are a food supplement to the indigenous pigs, resulting in their meat being regarded as superior quality due to their acorn diet.

The rock rose provides firewood (used in traditional stone-built bread ovens outside people's homes) and - along with lavender and heather - is fed on by bees kept for pollen, honey and candle-wax.

Another provider of food and income are the wild fungi associated with the cork oak trees. Many of these are edible mushrooms - amanita caesarea, boletus aereus, boletus edulis, cantharellus cibarius, marasmius oreades, terfezia leptoderma etc - which fetch high prices in the market, and are an essential economic supplement for many families.

The strawberry tree, as another example, provides berries for alcohol and cooking fuel, often collected and sold at local trading posts.

The economic value of the natural landscape alone is therefore very high.

4. Ecotourism

Ecotourism is a relatively new word and it can be defined as "Environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features both past and present) that promotes conservation,

CORK – ENVIRONMENTAL IMPORTANCE

has low negative visitor impact and provides for beneficially active socio-economic involvement of local populations."⁷

As a result, tourism can potentially bring great benefits to rural areas. It is an important source of employment for local communities, and can also serve as a marketing tool to attract potential residents and business to a region.

In the local towns, amidst the cork oak forest regions, a number of small lodges, hotels and camps have supported local communities in terms of employment, training and the setting up of income generating projects.

Small scale ecotourism has served to heighten the environmental awareness of those who visit the landscape, promoting nature conservation by means of a broad spectrum of outdoor recreational activities including hunting, fishing, camping and bird watching.

Cork oak forests and wildlife

Montados safeguard a wide range of habitats for flora and fauna and are the reason that the Mediterranean is known as one of the 35 global 'hot spots'.⁸

Flora

The Mediterranean Basin is home to between 15 and 25 thousand plant species, half of which only exist in the Mediterranean, meaning they are endemic to the region. The cork oak tree is one of them⁹. It is also the region of the world with the third highest number of endemic plant species¹⁰.

In cork oak landscapes, plant diversity can reach a level of 135 species per 1000 square metres¹¹ and many of these species have aromatic, culinary or medicinal uses, including various types of lavender, oregano, rosemary, mint and digitalis. The harvesting of these plants and subsequent processing (through drying and distillation) is an important economic resource for local inhabitants.

Cork oak forest undergrowth includes shrubs and bushes such as heather, gorse, broom and lavender, as well as rock rose and strawberry trees.

In addition, in a study carried out at the Field Station of the Centre for Environmental Biology in the Grândola Mountain Range, 264 species of fungi (of which 83 are edible), 20 hepatic species and 50 mosses were identified.

The grass species *Avenula hackelii* or the legume *Ononis hackelii* are two examples of endemic plants found in montados. Mushrooms are another species found in the montado, some of them highly valuable (Pereira, Santos: 2008).

7 Hector Ceballos-Lascurain (1983)

8 Conservation International (<http://www.conservation.org/How/Pages/Hotspots.aspx>)

9 João Santos Pereira – Do Sobreiro à Cortiça – um sistema sustentável (2008)

10 Myers, Norman & al - Biodiversity hotspots for conservation priorities (2000)

11 Díaz-Villa MD, Marañón T, Arroyo J, et al. 2003. Soil seed bank and floristic diversity in a forest-grassland mosaic in southern Spain. J Veg Sci 14: 701-709

CORK – ENVIRONMENTAL IMPORTANCE



ROCK ROSE



LAVENDER



DIGITALIS PURPUREA

Fauna

The Mediterranean Basin is home to 770 vertebrate animal species, of which 235 are endemic to the region, divided among:

Type	Species	Endemic
Birds	345	47
Mammals	184	46
Reptiles	179	110
Amphibians	62	32
Total	770	235

Source: Myers, Norman & al - Biodiversity hotspots for conservation priorities (2000)

The cork oak forests ensure a great natural biodiversity of wild fauna, of which 24 species of reptiles and amphibians (53% of the Portuguese population), more than 160 bird species, and 37 mammal species (60% of Portuguese mammals)¹².

Montados play a crucial role in protecting the most charismatic species, threatened with extinction in the Mediterranean (table 1) and provide a habitat to millions of migratory birds from Northern Europe, including the entire crane population - a species larger than the capped heron (in winter around 45000 birds migrate to the Iberian Peninsula, of which between 2000 and 3000 remain in Portugal during autumn and winter; Source: www.naturlink.pt).

Table 1: Key examples of threatened species found in Mediterranean montado landscapes, according to the WWF.

Species	Estimated numbers
Iberian Lynx (<i>Lynx pardinus</i>)	Fewer than 100 (not counting cubs of the year)
Iberian Imperial Eagle (<i>Aquila adalberti</i>)	150 breeding pairs
M Barbary Deer (<i>Cervus elaphus barbarus</i>)	Found only in North West Tunisia and North East Algeria. No available estimate of number of individuals.
i Black Vulture (<i>Aegypius monachus</i>)	1.050 – 1.150 breeding pairs in Spain (based on Tucker & Heath – 1994)
l Black Stork (<i>Ciconia nigra</i>)	800 breeding pairs in Spain (based on Castro & al., 1997)
i Black Stork (<i>Ciconia nigra</i>)	A total estimate for Spain of 350-400 breeding pairs
o	
n	

¹² Reis, M. S.; Correia, A. I. "Caracterização da flora e fauna do montado da Herdade de Ribeira Abaixo", Centro de Biologia e Recursos Naturais, Lisboa(1999)

CORK – ENVIRONMENTAL IMPORTANCE

Thousands of other migratory birds choose the montados as an ideal winter habitat. Nightingales, thrushes, chaffinches, woodpeckers and capped herons from Northern Europe are just some examples.

The montado also plays an important role for migratory birds moving to Africa. The majority of birds migrating across the Strait of Gibraltar come from Western Europe, such as storks, kites, vultures, buzzards, booted- and short-toed eagles. For this reason, the Strait of Gibraltar together with the Straits of Messina and Bosphorus are the main crossing points for hundreds of thousands of soaring birds.

The montados close to the Strait of Gibraltar (Los Alcornocales Natural Park, Spain, and Northern Morocco) therefore occupy a strategic position in these movements. From Los Alcornocales Natural Park, in the heart of Andaluzia, over 600.000 birds were observed flying overhead between July and November 2005 (Source: Junta de Andalucía, Consejería de Medioambiente, 2006).

Among the bird species normally found in the montado are kestrels, little owls, southern grey shrikes, black-winged kites, Iberian imperial eagles, black vultures, great spotted cuckoos and black storks, of which there are only 83 - 96 pairs in Portugal (Source: ICBN).



GREAT SPOTTED CUCKOO



BLACK-WINGED KITE

A number of species of birds of prey also depend on the montado habitats because the forests provide sturdy, tranquil nesting sites, whilst the grasslands are ideal hunting grounds. The scrub areas are often the ideal breeding grounds for prey, such as rabbits.

For example, there is a population of endangered Bonelli's eagles in Portugal (77-80 pairs according to Instituto de Conservação da Natureza e da Biodiversidade) which has adapted to nesting almost solely in cork oak trees. The big, open canopy of the trees provides nesting spots, whilst the tranquillity of the woods is conducive to breeding. The gnarled, holey bark of the tree is a convenient source of insects for feeding.

Southern Portugal also has a small Golden Eagle population, and thriving peregrine falcon and griffon vulture populations in the montados, a semi-perennial home to other threatened species such as the red kite and lesser kestrel.

CORK – ENVIRONMENTAL IMPORTANCE



BONELLI'S EAGLE



SHORT-TOED EAGLE

The IUCN report on threatened wild species showed that there are more rare birds species in Portugal than any other part of Europe.

Some information regarding species found in montados, according to the o Livro Vermelho dos Vertebrados de Portugal (Red Book of Portuguese Vertebrates, 2006):

- Iberian Imperial Eagle (*Aquila adalberti*): 2 - 5 pairs in Portugal, critically endangered;
- Short-toed Eagle: (*Circaetus gallicus*): 250 - 600 pairs in Portugal, near threatened;
- Black-winged Kite (*Elanus caeruleus*): 100 - 150 pairs in Portugal, near threatened, regarded as a Rare Species (BirdLife International 2004).
- Black Stork (*Ciconia nigra*): 83 - 96 pairs in Portugal, vulnerable, regarded as a depleted species, having suffered a sharp decline over time (BirdLife International 2004);
- Red Kite (*Milvus milvus*): 50 - 100 pairs in Portugal, critically endangered.

Montados are also rich in mammals, among them hares, weasels, foxes, wolves, genets, wild boar, deer, wildcat, wild rabbits and a few Iberian lynx.

The Iberian lynx is another animal critically endangered of extinction, according to the 1990 IUCN black list of threatened species. The Iberian lynx is the most endangered feline species in the world and the most endangered carnivore in Europe.

Studies carried out in March 2005 estimate that the number of surviving Iberian lynx is only 100, far short of the figure of 400 in the year 2000.

In recent years some organisations have sought to ensure reproduction of the species in captivity. Some examples of such projects:

- LIFE Lince Moura/Barrancos Project, by the League for Nature Protection (LPN), Portugal;
- Ex-Situ Programme for Conservation of the Iberian Lynx, Andalusia, Spain.



CORK – ENVIRONMENTAL IMPORTANCE

Sustainability of the Montados

Cork Forest and Chain of Custody Certification Systems

Definition of Sustainable Forest Management

Sustainable forest management (SFM) is the term currently used to describe approaches to forest management that set social, economic and environmental goals.

A range of forestry institutions now practice various forms of sustainable forest management and a broad range of methods and tools are available.

A definition of the present day understanding of the term sustainable forest management was developed by the Ministerial Conference on the Protection of Forests in Europe (MCPFE). It defines sustainable forest management as:

“The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions at local, national, and global levels, and that does not cause damage to other ecosystems.”

In other words, the concept can be described as the attainment of balance between societies increasing demands for forest products and benefits, and the preservation of forest health and diversity. This balance is critical to the survival of forests and to the prosperity of forest-dependent communities.

Scope of Forestry Standards

For forest managers, sustainably managing a particular forest means integrating a wide array of factors - commercial and non-commercial values, environmental considerations, community needs, even global impact - to produce sound forest plans.

Growing environmental awareness and consumer demand for more socially responsible businesses have increased the demand for products originating from forest certified raw materials. This rise of certification led to the emergence of several different systems throughout the world. As a result, there is no single accepted forest management standard worldwide and each system takes a somewhat different approach in defining standards for sustainable forest management.

Chain of Custody / Third Party Certification

Operations that use certified materials or that purchase and sell certified products can earn Chain-of-Custody (CoC) certification. CoC certification ensures that a product bearing the Certification label can be verified to contain sufficient quantities of certified materials.

Chain-of-Custody certification assures consumers and forest product companies that the products they buy come from certified forests. The certification program, thus, tracks the cork from the certified forests to the point of sale.

Certification Systems

With forest certification, an independent organisation develops standards of good forest management and independent auditors issue certificates to forest operations that comply with those standards.



CORK – ENVIRONMENTAL IMPORTANCE

This certification verifies that forests are well-managed — as defined by a particular standard — and ensures that the natural products come from responsibly managed forests.

The most common Cork Certification standards are:

1. Forest Stewardship Council (FSC):

The FSC is an independent, non-profit, non-government organisation based in Bonn, Germany, providing standard setting, trademark assurance, and accreditation services for companies and organisations interested in responsible forestry. It was created in 1994 by environmental organisations such as WWF, Friends of the Earth and Greenpeace, indigenous forest dwellers, professional foresters, big retailers such as Sweden's IKEA and the UK's B&Q; and large and small forest companies.

The FSC is active in 100 countries throughout the world, has certified over 183 million hectares of forest and 28 thousand of companies (November 2013)

In Portugal there are around 147 thousand hectares of certified montado, which represents 20% of montado total area and 47 Chain of Custody certificates held by cork companies. In the entire world there are already 246 Chain of Custody certificates in 21 countries.

2. Programme for the Endorsement of Forest Certification schemes (PEFC):

The PEFC was founded in 1999. It is an independent, non-profit, non-governmental organisation which promotes sustainably managed forests through independent third party certification. It is based in Luxembourg.

In Portugal PEFC certified already 225.396 hectares of forest, which represents 7,1% of the national forest total area. The certification of areas with cork oak trees represents 10% of this value, approximately 22 thousand hectares.

Concerning to the Chain of Custody, PEFC has already certified 102 companies/facilities, of which 6% (around 6 companies) was assigned to entities that are related with cork and its derivatives (Source: PEFC, 2012).

3. Protective National Legislation

National and regional laws in Portugal protect cork oak forests and forbid unauthorised felling of trees. Cork trees can only be cut down if they are dead or diseased and even then only with the written permission of the authorities.

Legislation imposes heavy fines for any damage or improper management of the trees and lays down strict rules governing the stripping and maintenance of trees. These state, for example, that a young tree cannot be stripped until it has reached a minimum of 25 years of age, and that the width of the tree must have reached a diameter of at least 70 cm at a height of 130 cm. They also state that the cork bark cannot be stripped above a height equal to twice the width of the trunk for the first stripping, or a maximum of three times the height for an adult tree in full production.

It is also not permitted to take cork from an adult tree's branches if these are less than 70 cm in diameter. In all cases, it is absolutely forbidden to harvest the cork more frequently than once every 9 years (even if an individual tree is ready for harvesting before this time period).

There are laws governing the tilling of the soil around trees, correct pruning and fines for neglect and mismanagement.

In Portugal, the first laws protecting the cork oak tree date back to the 12th century, and in more recent times a system of rules and regulations has been enforced since 1927. Since then, the laws

CORK – ENVIRONMENTAL IMPORTANCE

have been updated and revised frequently. The protection of the trees extends beyond legislation to the local level.

Many cork farmers are also members of forestry associations where there are management systems, of which the Code of Silvicultural Practices (Best management practices) is one, promoted and upheld by these organisations and strictly abided by by farmers.

Careful management of the forests enables the continued extraction of the cork bark and as a result farmers adhere to the forestry norms wholeheartedly.

4. Reforestation Programs

Several reforestation programs have been the drive behind the average 3,3% increase in cork oak forest areas in the last 10 years. Over 130.000 ha (in Portugal and Spain) were planted in the last 10 to 15 years, with a density of approximately 120 to 150 cork trees per hectare.

As a result of this the 2010 National Forestry Inventory (IFN), released by the Portuguese National Forestry Resources Department, stated that cork forest areas have increased from 731.099 to 736.775 hectares.

Sustainability of the cork industry

In the cork industry, the catchphrase “nothing is lost, everything is transformed” applies perfectly. Throughout the entire production process, all waste arising from the production of cork stoppers is transformed into useful, high quality products. From technical and agglomerated stoppers to flooring panels and wall coverings, decorative items for home and office, art and design items, shoe soles, applications in the automotive industry and the military and aerospace industries, chemical products with pharmaceutical uses, among others. Even cork dust is used for co-generation of electricity.

A study by PricewaterhouseCoopers/Ecobilan¹³ about the life cycle of cork stoppers compared to aluminium caps and plastic closures showed that cork stoppers possess environmental advantages with regard to alternative closures in the various indicators examined.

With regard to the emission of greenhouse gases, the study reveals that each plastic closure causes 10 times more CO₂ than a cork stopper, while the CO₂ emissions caused by an aluminium cap are 24 times greater than those caused by a cork stopper.



Source: APCOR yearbook, 2009

¹³ PricewaterhouseCoopers/ECOBILAN, “Evaluation of the environmental impacts of Cork Stoppers versus Aluminium and Plastic Closures” (2008)

CORK – ENVIRONMENTAL IMPORTANCE

These results take into account the fact that each 45x24 cork stopper retains 6,4g of CO₂, corresponding to the carbon incorporated into each cork by means of photosynthesis. The impact of each phase of the life cycle is summarized in the following table:

EMISSÕES CO₂ POR FASE DO CICLO DE VIDA
CO₂ EMISSIONS PER LIFE CYCLE PHASE

	CORTIÇA CORK	PLÁSTICO PLASTIC	ALUMÍNIO ALUMINIUM
Produção Production	-3 280,5	12 618,3	36 701,0
Transporte Transport	920,9	323,1	439,4
Engarrafamento ¹ Bottling ¹	3 272,3	3 272,3	0,0
Fim de Vida End of Life	524,0	-1 497,5	20,3
EMISSÕES TOTAIS CO₂ (g/1000 VEDANTES) TOTAL CO₂ EMISSIONS (g/1000 STOPPERS)	1 436,7	14 716,2	37 160,7

¹ CONSIDERA APENAS A CÁPSULA DE PVC, HABITUALMENTE UTILIZADA EM GARRAFAS COM ROLHA DE CORTIÇA OU DE PLÁSTICO
¹ DO YOU CONSIDER ONLY PVC CAPSULES, USUALLY USED IN BOTTLES WITH CORK OR PLASTIC CLOSURES

Source: APCOR yearbook, 2009

The graph below shows the results when the carbon retention of the montado associated with the use of 3,5g of cork (the weight of each stopper) is factored in.

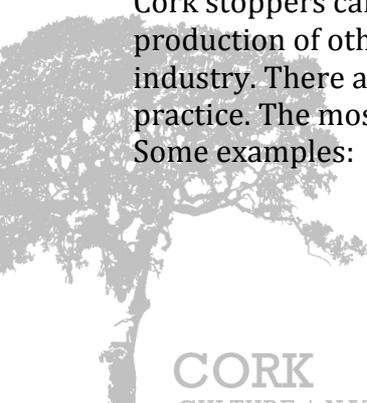


Source: APCOR yearbook, 2009

In fact, natural cork stopper is considered, together with all cork oak forest (montado) that depends on it, is able to retain 112g of CO₂ per unit.

100% recycled cork stoppers

Cork stoppers can also be recycled and reused. Used stoppers are ground up and used in the production of other agglomerated products, although they may not be reused within the wine industry. There are a number of initiatives throughout the world which have put this idea into practice. The most recent was launched by Quercus, with the Green Cork Project. Some examples:



CORK – ENVIRONMENTAL IMPORTANCE

Portugal

- **GREEN CORK Project** – launched by Quercus, Modelo/Continente Group, Biological and Corticeira Amorim. Cork stoppers are gathered at supermarkets and some hotels. More information at www.greencork.org.
- São Brás de Alportel Municipal Council, in the Algarve – Cork collection containers (**Rolhões**) located in various parts of the city and collection at restaurants.
- **“Saca-Rolhas” (“Corkscrew”)** is the name of a project carried out by the Portuguese Guides’ Association, aimed at collecting used cork stoppers in various locations. More information at www.guiasdeportugal.org/projectos/rolha.htm.

There are also a number of **international** initiatives:

Australia: Since 1992, cork stoppers have been collected and recycled by the scouts Girl Guides who gather over 30 tonnes of cork each year from friends, hotels, restaurants, clubs and wineries.

More information at: <http://www.guidesaus.org.au/page.php?pageid=20#Corks>

Germany:

- the supermarket chain Kaufland, belonging to the Schwarz group, which also owns LIDL, has operated a scheme for gathering cork stoppers in 100 shops for over 10 years. The initiative, known as the Korkie programme, supports a charity organisation for disabled people in Kehl, in southern Germany, which receives the recycled cork stoppers and transforms them into various products which it then sells.
- NABU, a German environmental association, runs a cork stopper recycling project which has been implemented in 1000 locations including its own offices, schools and government bodies. The initiative, known as “Korkkampagne” aims to collect cork stoppers in Hamburg and donate them to one of the city’s main associations for disabled people. The association currently receives 30 tonnes of cork stoppers each year. More information at http://www.nabu.de/m07/m07_02/04207.html.

Belgium: Petit Liège is a programme which has been in place since 1997. As of 2007, 17 million corks stoppers had been collected in various parts of Belgium and France. More information at: <http://users.swing.be/petit.liege>.

USA:

- ReCork America collects cork stoppers in tasting halls, bottling lines and quality laboratories. It also seeks to form protocols with retailers and supermarkets in large cities with a view to placing containers for collection of stoppers. More information at: www.recork.org.
- Cork Re-Harvest has been collecting stoppers in the USA and Canada since 2008. In addition to collection, the group’s activities include educating the public about montados and biodiversity, raising awareness of the threat of extinction faced by the Iberian lynx and Iberian imperial eagle. More information at www.corkreharvest.org/.

CORK – ENVIRONMENTAL IMPORTANCE

More information about the environmental importance of the montado at “From the cork oak to cork: a sustainable system”: <http://www.apcor.pt/artigo.php?art=653> (available in PT, EN, FR and DE).

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“Cork Screwed? Environmental and economic impacts of the cork stoppers market”, WWF Report, May, 2006: <http://www.wwf.org.uk/filelibrary/pdf/corkscrewed.pdf> (available in EN).

“Evaluation of the environmental impacts of cork stoppers versus aluminium and plastic closures”, PricewaterhouseCoopers/Ecobilan, October, 2008:

http://www.corkfacts.com/pdffiles/Amorim_LCA_Final_Report.pdf (available in EN).

