

# ARCHITECTURE, TOURISM AND SUSTAINABLE DEVELOPMENT FOR THE DOURO REGION

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## RESUMO:

Acreditamos que a arquitectura e construção sustentável é fundamental, para alcançar a conservação e o desenvolvimento da Região do Douro, com reconhecido potencial para o crescimento Turístico. Os edifícios, que possibilitam a ocupação turística, implicam um consumo extra de recursos naturais e energéticos, quando comparados com os níveis de consumo das populações locais. Para avançar nesta área, estamos a reunir uma amostra representativa de empreendimentos turísticos, que serão analisados segundo critérios de métodos de avaliação de construção sustentável. Estamos também a recolher dados relativos ao conforto e satisfação dos utilizadores destes edifícios, com o objectivo de conhecer a relação entre as exigências de conforto dos turistas e consumo final de recursos. Como resultado, este estudo pretende adequar critérios de certificação ambiental desta categoria de edifícios, ao contexto geográfico específico, assim como, definir quando necessário, estratégias de intervenção correctiva.

## ABSTRACT:

We claim that sustainable construction and architecture have a vital role in achieving the full potential for conservation and development of the tourism of the Douro Region, with recognized capacity for tourism growth. Buildings that make possible tourism occupation involve extra consumption of energy and natural resources, when compared to average levels of local communities. To make progress on this, we are gathering a representative set of tourism compounds that will be analyzed through criteria from evaluation methods of sustainable construction. We are gathering data related to the comfort experience of this buildings' users, aiming to know the ratio between tourists' demands of comfort and final consumption of resources. As a result of this research, we intend to refine environmental certification criteria in this specific geographical context and building category and, if necessary, define corrective intervention strategies and guidelines.

**PALAVRAS CHAVE** Arquitectura Sustentável; Turismo; Douro; Construção Sustentável

**KEY-WORDS:** Sustainable Architecture; Tourism; Douro region; green-building.



element. The sub-region *Alto Douro Vinhateiro*, recognized for the Vineyard of Porto Wine, is a Unesco World Heritage Site and one example of a successful relationship between human economic activity and demanding natural elements. This region has critical characteristics of fragile water resources, in spite of its proximity to an apparently stable river. Further upstream the “International Douro is an orographic enclave formed by the River Douro and its tributary the *Águeda*, natural border between Portugal and Spain, has unique characteristics in terms of geology and climate, affecting communities of plants and animals, including birds, and the actual human activities” (ICN, 2007). This particular area was recognized as Natural Park in 1996 (RCM, 1996) and crosses three NUTIII regions, starting from *Douro*, continuing to the Northeast into the *Alto Trás-os-Montes* and stretching Southeast the *Centro* NUTIII region. Several other entities, not listed on figure 1, have general territorial management and tourism specific skills for a region that has a wide diversity of landscape, morphology, geology, climate, demographic and socio-economic characteristics. Forestry and agriculture are relevant economic activities in the region, both for its historical and contemporary significance. Though the industrial and tertiary activities and tourism services are sectors that should lead the economic future of the Douro region, only with all vigorous sectors the region can effectively set the population. Data reveals that Municipalities with positive demographic trends have in common the existence of alternative activities to the primary sector due to the possibility of obtaining better wages and the existence of a greater diversity of employment opportunities, enabling the incorporation of young people with higher education levels more heterogeneous than in rural societies. Recently published *PROT-N* (North Regional Plan for Territory Planning) recommends the adoption of a wide range of principles and guidelines for strategic options and operational objectives set for the protection, re-qualification, enhancement and management of water resources, especially by its great relevance for regional development. The main goals are to ensure the management of basin water resources, to strengthen Iberian cooperation in water resources field, and to

promote socio-economic enrichment of riverside areas, through activities related to nature tourism and leisure, taking advantage of traditional hydraulic heritage and cultural values. This document refers to tourism as a transversal activity with strong territorial impact, that interacts with and depends on several factors for its economic, social and environmental sustainability. Four fundamental assumptions are identified in the *PROT-N* as guides to ensure tourism regional development – Excellence, Sustainability, Competitiveness and Innovation. Also regarding the regional model for energy, *PROT-N* recommends the adoption of best practices for monitoring and benchmarking the region. In order to assess the progress in energy-environmental sustainability, each subregion should define its goals and actively measure them. Tourism is to be set under tight rules on energy performance according to the energy certification legislation (SCE, 2006) requiring that the new 5-star ventures must have class A+ and the 4-star tourism developments should have class energy A or A+. Other *PROT-N* recommendations emphasize the need to promote rail infrastructure in the region and improve integration and coordination of public transport offered by the different operators.

The Douro region is currently facing marginalization of its territory in the national and european level. The socio-economic decline seriously threatens territorial cohesion in a region that struggles to maintain minimum levels of territory occupation and access to local public services and amenities. According to *PROT-N*, the main challenges for this region are to increase its critical mass in terms of population, its attractiveness, competitiveness and its capacity of being self supportive. To realize these ambitions it is mandatory to ensure the pursuit of excellence, the promotion of innovation and encouragement of partnerships between public and private sectors.

Among the main *PROT-N* Strategic Guidelines for the Douro region the need to strengthen key economic and productive vocations of the region is highlighted, rearranging and qualifying the business areas and promoting tourism that focuses on local vocations, resources and values, as a major vector of development.

### 3 TOURISTS

Data from the Department of Tourism (DGT - tourism in Portugal, the main source markets, 2001-2004), reveals that the tourists who visited Portugal in recent years are mainly from countries such as Spain, Germany, United Kingdom, France and other northern Europe countries. The environmental and ecological awareness and the importance that ecology has on public opinion, is higher in the visitors' origin countries than in the general populations of the visited regions. The "German tourists have a higher environmental orientation than those of other nationalities, and more than 50% takes into account environmental concerns in their decisions to travel" (Kaae, 2001). Given that Portugal is second largest source of tourists is Germany, in terms of overnight stays in hotels (about 16.4% in 2004, according to INE and DGT), it is of extreme importance in the strategic development of Douro tourism to consider the relevance given by this tourists to environmental issues. Moreover, we should note that this market is decreasing the amount of arrivals in Portugal since 2000, which could, among other things, be a reflection of deviation to other destinations with more environmental awareness than Portugal. These tourists are mainly distributed over 874 *pensões* (hostels), along many regions of north and center of Portugal. In terms of number of accommodation category, hotels appear in the second place with 563 units, with the regions of Lisbon, center and north holding the largest number of units, with about 66% of the total offer (Costa, 2006). It should also be noted that 2004 saw an increase accommodation capacity in campsites 3.7%, and rural tourism, more 5.1% of beds than 2003 (Silva, 2005).

We want to know to what extent is the "eco-efficiency" factor relevant in the satisfaction of tourists visiting the Douro region.

### 4 STATE OF THE ART

Architecture and construction, understood as means for human settlement, represent irreversible transformation of the natural environment. The growing interest in various forms of tourism, in the most recent period of human history, pursued the industrialization and is associated

with the development of "spare time" concept. Since recent evidence of growing global awareness of the scarcity of resources, mankind is increasingly committed to redefining processes to reverse the trend of increasing natural resources and energy consumption. It is now required that tourism architecture ensures the sustainability of systems in which they operate. We are looking for models of sustainable development to reconcile economic development, social justice and the efficient management of natural resources. The WTO Global Code of Ethics for Tourism dedicated the 3rd Article to tourism as a factor for sustainable development. It states that "All the stakeholders in tourism development should safeguard the natural environment with a view to achieving sound, continuous and sustainable economic growth geared to satisfying equitably the needs and aspirations of present and future generations" (OMT, 1999). Also a specific reference is made to construction of infrastructure, which "should be designed and tourism activities programmed in such a way as to protect the natural heritage composed of ecosystems and biodiversity and to preserve endangered species of wildlife".

According to recent reports of WTO, Europe reveals growing interest in activities associated with rural tourism and directly linked with nature. This is also probably related to the fact that the population residing in large urban areas is growing worldwide. The proportion of the world's urban population should grow up to 60% by 2030, according to the information services of the United Nations (UN, 2005).

Tourism is now globally understood as determinant to economic and social development. Nations such as Sweden and Finland already enjoy the results of coherent policies to improve environmental indicators, presenting the world's highest levels of development (Esty, 2006). In Portugal we see ambitious presentations of documents such as Guidelines of the National Strategic Plan for Tourism (MEI, 2006) and the Lisbon Strategy. There we can find explicit intentions to "accelerate Tourism growth" and follow a sustainable model, along with the desire to promote "agricultural and forestry policies that reconcile productive activities, services, nature conservation, sustainable use of natural resources and protection of the landscape". These political commitments to "accelerate

growth” should be replaced by the desire to “consolidate and qualify”, not to underline the divergence with international and European referential contexts. It is increasingly “difficult to support the claim that sustainable development is continuous economic growth” (Partidário, 1997). Doubts as to the proper implementation in the field of sustainable planning policies are still fed by reports indicating that 63% of all new tourism projects for the Algarve (South of Portugal) will be in Protected Areas. Moreover, these “developments” were only presented as “five-star hotels” (Rosa,2007). If doubts arise at the level of choosing the most sustainable localization, more uncertainties lie on the effective construction of these tourism buildings that are likely to be caught by the Vicious Circle of Blame (Cadman, 2000) represented in figure

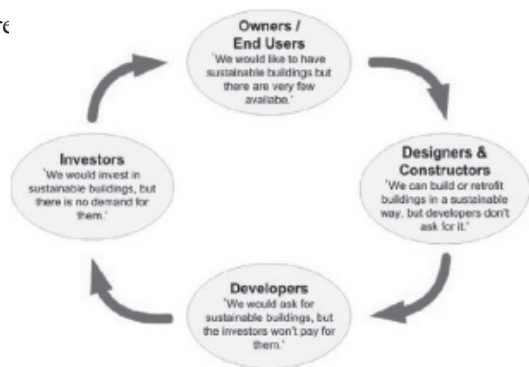


Figure 2. The Vicious Circle of Blame, adopted from Cadman, 2000 (FiBRE,2008)

Parallel to this generic reflection on reasons why buildings are highly unsustainable, in the Portuguese context it is clear that innovative and sustainable products available on the construction industry take too much time to be actually used. To illustrate this fact, the most consensual example can be found in the small number of solar panels for domestic hot water installed in Portugal, when compared to the rest of Europe and locations with less Sun radiation. Even with recent government direct incentives of about 50% of total investment necessary for acquiring a solar water heating systems (Medida Solar Térmico 2009) that significantly raised the number of installations, demand for this efficient proven technology continues very low. Possibly, some other reasons that block innovation and sustainable construction to be applied specifically to Tourism are: stakeholders are insensitive to added value of

eco-efficiency and are unwilling to take the risk of innovative solutions, choosing safe conventional solutions, architects and designers involved in the construction processes, don't deal with multi-disciplinary teamwork; architects and designers unable to calculate and communicate the tangible benefits of sustainable building solutions over conventional solutions; high institutional bureaucracy consumes too much time between the start and completion of the project withdrawing the innovation factor; lack of eco-efficiency studies applied specifically to the Tourism buildings and infrastructure to sustain decisions for eco-efficient architecture - though there are several studies focusing on implementation, management and monitoring of eco-tourism facilities, where there is a social, anthropological, environmental or cultural study object, very little focus has been made on construction and architecture solutions; added value and positive differentiation of sustainability certification is not yet demonstrated for tourism services and buildings - at the moment (December 2009), Portugal has only five tourism services certified by the Community eco-label (Label created in 1992 and revised in 2000 by the European Parliament) and three LiderA certified Buildings. Large investment projects advanced for the region will hardly change the business model of conventional tourism, despite exhibiting “green” ambitions and applying to higher market levels. While these investments “normally display substantial quality standards and formally present good sustainability indicators in terms of consumption of water resources, energy or waste management”, most often they neglect singularities of the local context and the region only fulfills the function of support for the tourism activities that are instantly profitable.

Douro region needs to adopt touristic standards based on the contemporary adaptations of the original ecotourism model. the term ecotourism was “coined by héctor ceballos-lascuràin in 1983, and was initially used to describe nature-based travel to relatively undisturbed areas with an emphasis on education”(rajan, m). nowadays, ecotourism is synonymous with models of sustainable tourism development that meets in the present the needs both of the tourists and of the visited regions, and at the same time protects and ensures equal opportunity for the future. the management of resources

must be such that the economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, ecological processes, biodiversity and all systems of life support

#### 4.1 SOME EXAMPLES

The subject region has no significant or consistent ecotourism projects established, as far as we have been able to perceive, nature oriented tourism accommodations are built in current standards and no innovative solutions have been explored yet.

The eco/sustainable/community-based tourism, widely presented as a tool for development of poor countries or regions, has its actual benefits and effectiveness progressively questioned and debated. Although there are many early succeeded experiences, only a hand-full of examples have lasted for more than a decade (Luleciler, 2009). In relatively stable western countries, where social and cultural issues aren't extremely delicate, focus on economic and environmental sustainability allows some space for creativity and experimentation.

In this context, we would like to present a couple of international innovative and systematized solutions to illustrate in what extent ecotourism models can evolve and be reinterpreted to incorporate value in areas with similar problems and opportunities as the Douro region. The examples were chosen only for the simplicity and small scale and innovative approach, though they are not to be seen as best practices or "how to do" solution for the Douro region.

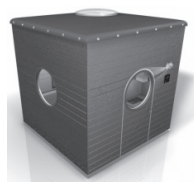
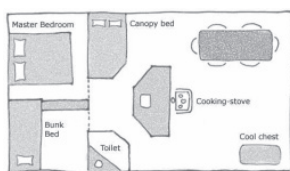


Figure 3. Feather Down Farm tent layout [www.featherdownfarm.com](http://www.featherdownfarm.com) Figure 4. Carré d'étoiles 3D CAD simulation [www.carre-detoiles.com](http://www.carre-detoiles.com)

Figure 3 is available on the internet site of "Feather Down Farm" which is a farmers alliance in the United Kingdom, The Netherlands, Belgium, Germany and United States of America. This on-line tourism business structure is located in selected farmland and rural areas. The Feather Down farms pretend to recreate the rural experience, in

harmony with the rhythm of such life, operating only on working farms where the farmers are passionate guardians of the countryside. Every Feather Down farm has its own speciality: one might specialize in beef; another in organic products; one might be dairy; another might combine cattle with horses or sheep. Not entering in architectural or marketing value judgments, the model Feather Down farm tent is described as "incredibly spacious and comfortable", with "traditional interiors" recreating ancient rural life. Though this business is not globally presented as independently eco certified franchising structure, it aims to emphasize site historical significance and rural conservation is high on the agenda. Some farms are into a Higher Level Environmental Stewardship Schemes, aiming to encourage many aspects of conservation. This work includes restoration of old ponds, ditches, fences and hedges, as well as constructing new ponds and lakes to encourage wildlife habitats of rare and endangered plants and animals.

Figure 4 is the key image of a totally different approach to what promoters name as "get away from it all tourism". This "Carré d'étoiles" is also on-line tourism business structure which proposes the rediscovery of a night spent in the open air, through a forward-thinking innovative type of accommodation. It is a portable and reversible structure set to be placed in any compatible environment. The concept is declared to be based on wisdom and perfection, daring architecture cube shaped accommodation embodying stability and probably a spaceship like experience. Each "cube" is hi-tech equipment and is prepared to make superb sky gazing experience possible. Each module comes with a sky observation kit, including telescope, stellar chart and pedagogic astronomy games. Some construction details are declared as environment friendly, namely bio-ethanol chimneys and recyclable wood structure.

#### 5 THE APPROACH

Within the Douro geographical context, this research's focus is to analyze the architectural features of the region's most representative tourism buildings, to identify what defines and determines comfort and satisfaction of buildings visitors and users and finally to promote

corrective strategies for the analyzed buildings along with organized information to support future building projects.

The fieldwork is being prepared with the objective of gathering architectural surveys on each chosen touristic facility. Though Christian Baumgartner (Costa, 2006) states that “visitors are not interested in staying in a sustainable hotel in a non sustainable region”, we feel that the sustainability isn’t yet assessed nor guaranteed in the building level and so, the region sustainable balance can be irreversibly compromised.

The World Tourism Organization (Inskip, 1998) recommends that the principles of sustainable tourism development should undergo a careful analysis of the tourists satisfaction levels so that destinations retain their popularity and attractiveness. Tracking this recommendations in the architectural perspective, means that primary sources, in the shape of data gathering near visitors and users of buildings, is necessary to minimize environmental damage and to promote the use of eco-efficient techniques of construction and design. This detailed data, collected from visitors and direct users, complies with the principle of “participatory tourism, which argues that” sustainable tourism is reflected in a strategy to convert the traditional model and the incorporation of new parameters management (Fraguell, 1998). This will allow a solid setting of standards for “environmental comfort” in the region.

The ambitioned result will not create another assessment system of sustainable construction. The aim of this research is to find concrete solutions, starting from the existing systems available and the new data collected on site, in order to develop indicators to assess sustainable construction in the context of the Douro region. This research aims to provide specific data to improve existing methods such as SBTool, LiderA, LEED or BREEAM in the specific analysis of tourism buildings.

## 6 CONCLUSIONS

The potential conflicts or benefits that arise from local versus global construction standards is one of the key factors to determine the outcome of the region touristic success extremely dependent on territorial landscape

identity. Conflicts can arise due to scarce resources abuse and misuse, whereas in this sense buildings and particularly those related to tourism use have incontestably responsibility if not properly conceived and managed. Benefits can be found if small scale, locally integrated touristic facilities which are in harmony with the local landscape and where tourists share space with hosts and social exchange occurs (Luleciler, 2009).

Sustainable tourism is an extensively proclaimed strategical goal for the Douro region. This ongoing work and other related and critical investigation are indispensable to provide valid input for local governance decisions and territorial management tools.

## REFERENCES

- BREEAM. 2007. *BRE Environmental Assessment Method*. [accessed in 08/06/2007]. <http://www.breeam.org>
- COSTA, C. N. Careto, H. & Lima, S. 2006. *Turismo e Desenvolvimento Sustentável*. GEOTA.
- ESTY, D. C. *Pilot 2006 Environmental Performance Index*. Yale Center for Environmental Law & Policy
- Center for International Earth Science Information Network CIESIN. *World Economic Forum. Joint Research Centre of the European Commission, 2006*.
- ETC - European Travel Commission. 2006. *Megatrends of tourism in Europe*. [accessed in 2007] [http://www.etc-corporate.org/resources/uploads/ETC\\_Tourism\\_Trends\\_for\\_Europe\\_09-2006\\_ENG.pdf](http://www.etc-corporate.org/resources/uploads/ETC_Tourism_Trends_for_Europe_09-2006_ENG.pdf)
- ICN - Instituto da Conservação da Natureza. *Parques Naturais - Douro Internacional*. [accessed August 2007] <http://portal.icn.pt/ICNPortal/vPT/Areas+Protegidas/ParquesNaturais/DouroInternacional/Parque+Natural+Douro+Internacional.htm>
- INSKEEP, E. 1998. *Guide for Local Authorities on Developing Sustainable Tourism*. World Tourism
- FEDRIZZI, R. *LEED - Leadership in Energy and Environmental Design* [accessed in 06/07/2007] <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>
- FRAGUELL, R. M. 1998. *Ecomediterrània Turismo Sostenible en el Mediterráneo - Guía para la Gestión Local*. M. P. Ulixes21, Ed. Brau, Barcelona.
- LINDBERG, K. & Hawkins, D. 2002. *Ecotourism: a guide for planners and managers*. ed. Senac.
- LULECILER, E. 2009. *Conflicting claims on territory and Identity: Community-based Ecotourism in Turkish Highlands – the case of Artvin*. <http://www.sper.pt/TPT093aCircular.pdf>
- MEI – 2006. *PENT - Plano Estratégico Nacional de Turismo*. [accessed in 2007/08/08]. [http://www.portugal.gov.pt/Portal/PT/Governos/Governos\\_Constitucionais/GC17/Ministerios/MEI/Comunicacao/Programas\\_e\\_Dossiers/20060120\\_MEI\\_Prog\\_PENTurismo.htm](http://www.portugal.gov.pt/Portal/PT/Governos/Governos_Constitucionais/GC17/Ministerios/MEI/Comunicacao/Programas_e_Dossiers/20060120_MEI_Prog_PENTurismo.htm)
- NOGUEIRA, I. M. 2007, *jornal do centro, Falta de gestão no Douro colocará o Património Mundial em Perigo*. [accessed in 2007/09] <http://www.jornaldocentro.pt/?lop=conteudo&cop=d9fc5b73a8d78fad3d6dffe419384e70&cid=ca6d6b468064abd249fb3533d4ddaed7>
- OMT - Organização Mundial do Turismo. 1999. *O Código Mundial de Ética do Turismo*. [accessed in 08/2007] [http://www.world-tourism.org/code\\_ethics/pdf/languages/Codigo%20Etico%20Ing.pdf](http://www.world-tourism.org/code_ethics/pdf/languages/Codigo%20Etico%20Ing.pdf)
- PARTIDÁRIO, M. R. - Presidência da República 1997. *Desafios da Interioridade: a riqueza ambiental e a vantagem para a sustentabilidade*. [accessed in 06/06/2007] [http://jorgesampaio.arquivo.presidencia.pt/pt/biblioteca/outros/interioridade/1\\_5.html](http://jorgesampaio.arquivo.presidencia.pt/pt/biblioteca/outros/interioridade/1_5.html)
- PARTIDÁRIO, M.R. Costa, C.N. & Careto, H. Lima, S. 2006. *Turismo e Desenvolvimento Sustentável*. GEOTA.
- PINHEIRO, M. D. *LiderA - Liderar pelo Ambiente*. [accessed in 06/06/2007] <http://lidera.info/index.html>
- PROT-N, Plano Regional de Ordenamento do Território do Norte. 2009 <http://www.ccr-norte.pt/regnorth/prot.php>
- RAJAN, M. *Defining eco-tourism*. [accessed in 6/2007] [http://www.doccentre.net/docsweb/Alternatives/eco\\_tourism.html](http://www.doccentre.net/docsweb/Alternatives/eco_tourism.html) <http://www.gdrc.org/uem/eco-tour/etour-define.html> [accessed in 12/2009]
- ROSA, L. *SOL*, 11.08.2007, p.8
- SILVA, M. - Direção Geral de Turismo 2005, *os principais mercados emissores*. [accessed in 2005/05/06] <http://www.turismodeportugal.pt>
- RAJAN, M. *Defining eco-tourism*. [accessed in 6/2007] [http://www.doccentre.net/docsweb/Alternatives/eco\\_tourism.html](http://www.doccentre.net/docsweb/Alternatives/eco_tourism.html) <http://www.gdrc.org/uem/eco-tour/etour-define.html> [accessed in 12/2009]
- UN - Department of Economic and Social Affairs - Population Division. 2005. *Urban and Rural Areas*. [accessed in 2007/08/08] [http://www.un.org/esa/population/publications/WUP2005/2005WUP\\_urban\\_ruralchart.pdf](http://www.un.org/esa/population/publications/WUP2005/2005WUP_urban_ruralchart.pdf)
- UK Green Building Council, 2009. *Sustainability Training and Education Survey - Executive Summary of Findings, Strictly Confidential*. [http://www.ukgbc.org/site/document/download/?document\\_id=679](http://www.ukgbc.org/site/document/download/?document_id=679)
- WTTC, IFTO, IH&RA, ICCL. 2002. *Industry as a partner for sustainable development - Tourism*. [accessed in 2006] <http://www.uneptie.org/outreach/wssd/docs/sectors/final/tourism.pdf>
- ZORRINHO, C, Ribeiro J. & Henriques, *Melhor Ambiente e Valorização do Património Natural*. Resolução do Conselho de Ministros nº 112/2005 2005. [accessed in 8/2007] <http://www.desenvolvimentosustentavel.pt/InnerPage.aspx?idCat=386&idMasterCat=375&idLang=1&idContent=849&idLayout=3&site=desenvolvimentosustentavel>

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