



# 9th European Geoparks Conference

Geoparks: Learning from the Past - Building a Sustainable Future

1-5 October 2010 Lesvos Greece



## Managing delicate socio-environmental impacts: Naturtejo European Geopark and the building of Alvito Reservoir at Almourão geosite

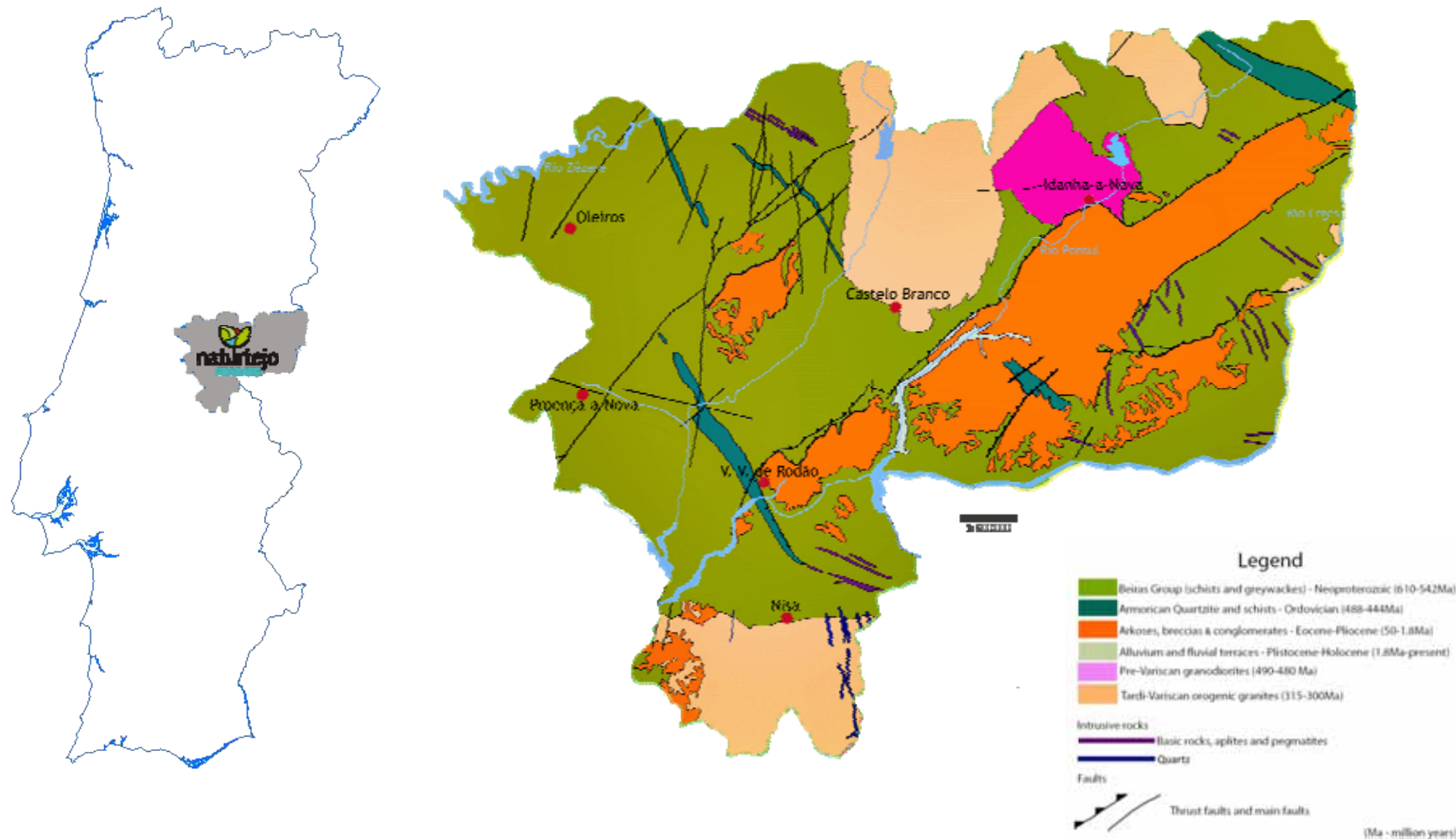


**Carlos Neto de Carvalho**  
**Joana Rodrigues**



# Geopark Naturtejo

## European and Global Geopark



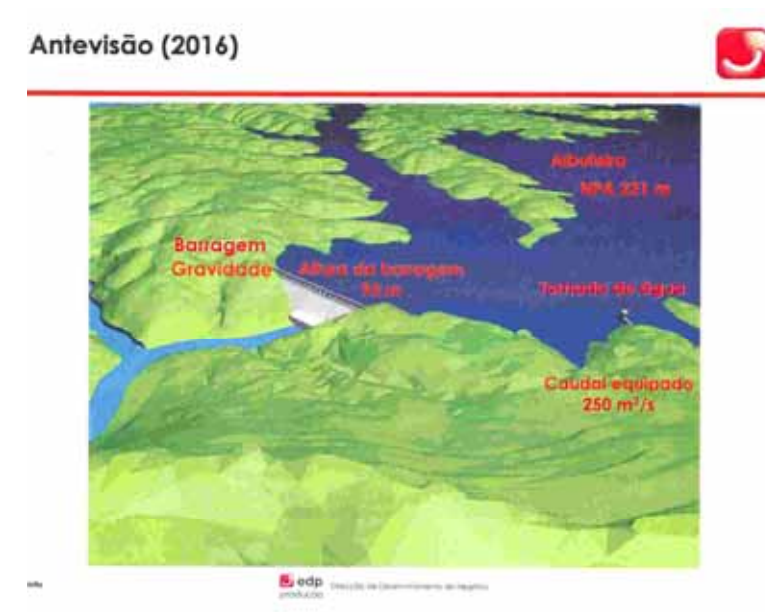
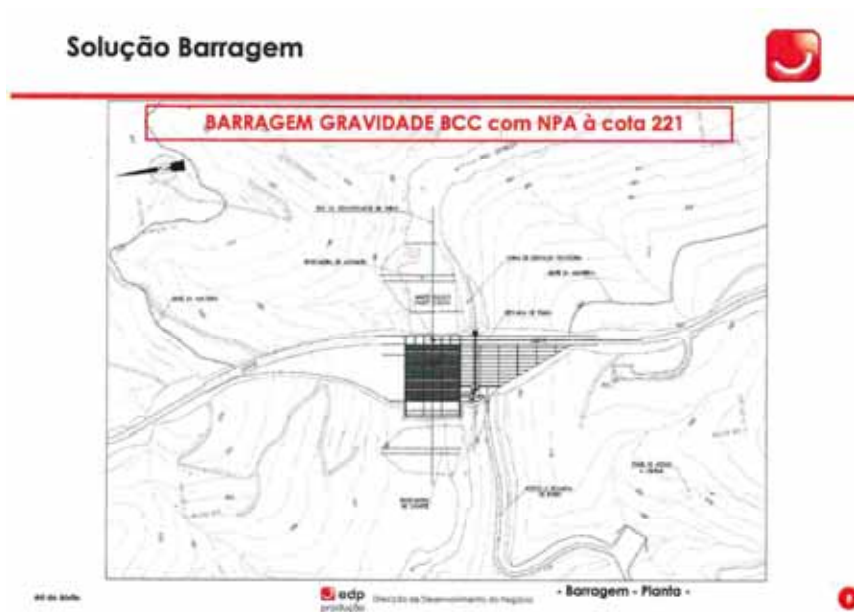
# Alvito Reservoir



- ◆ investment of 345 million euros (2009 -2016)
- ◆ 93 m-high and 430 m-long wall
- ◆ 225 MW of installed power (reversible flow)
- ◆ 1731 ha, 27,5 km-long lake, storing a volume of 425 hm<sup>3</sup>

# Alvito Reservoir

- ⊙ Project began in the 30's
- ⊙ Alvito Reservoir had always the enthusiastic consent of local authorities and people not aware of the weaknesses of the project



# EDP arguments for building Alvito Reservoir

- ❖ Between 2012 and 2016, 1000 direct working places and 3000 indirect will be created
- ❖ Reduction of CO<sub>2</sub> emissions and energetic dependency;
- ❖ Increasing regional economic dynamics;
- ❖ Building of new roads and replacement for better ones;
- ❖ Storing water for human consumption, farming and fight forest fires;
- ❖ Flood management of Tejo Basin;
- ❖ Development of tourism and leisure activities.



# Geological Heritage

## Portas de Almourão Geomonument

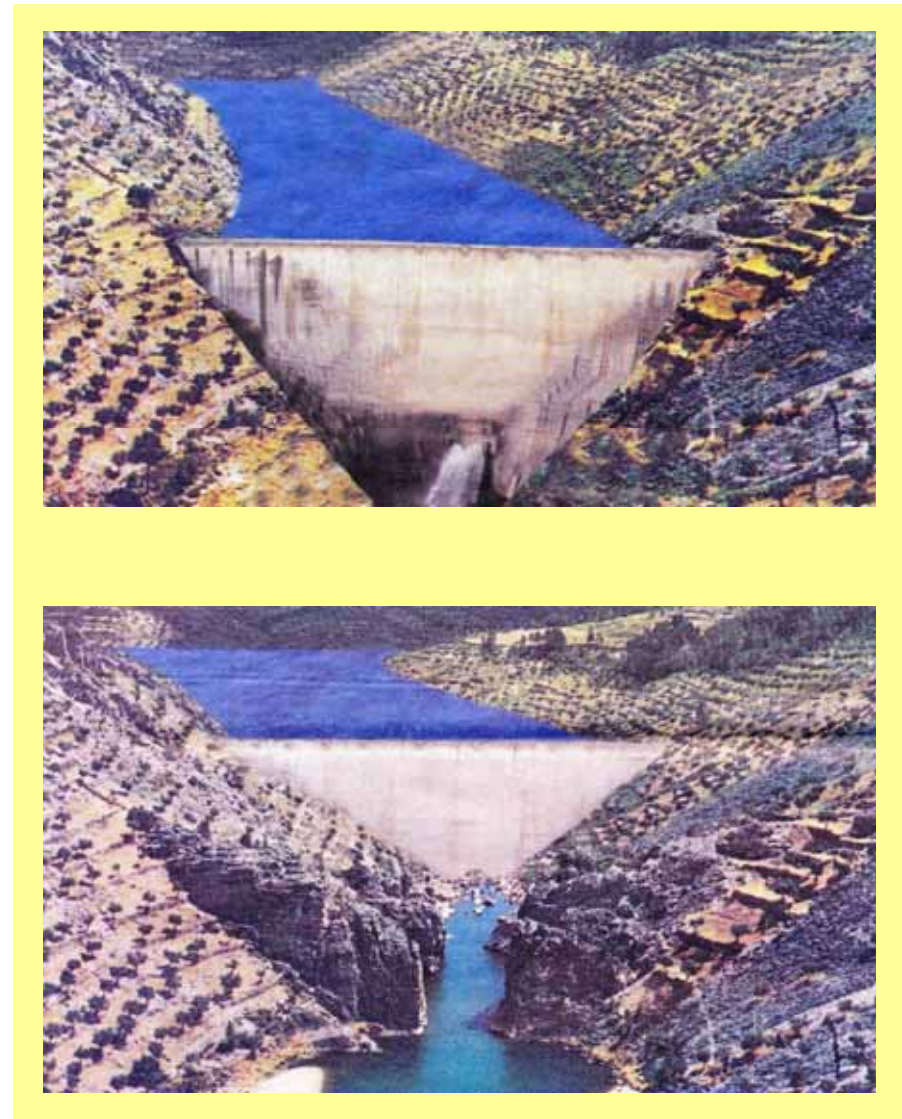


**Includes 9 geosites**

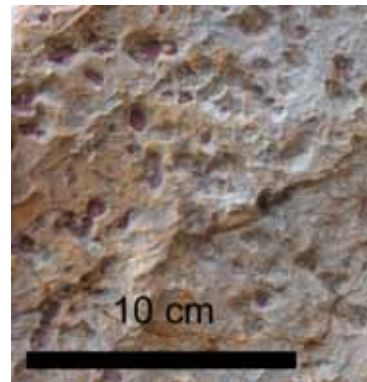
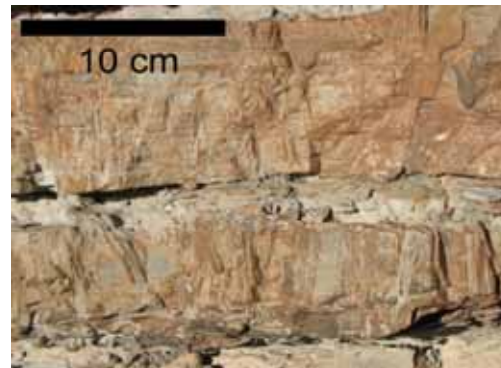
### Values:

- Geomorphology,
- Paleontology,
- Stratigraphy,
- Tectonics,
- Hidrogeology,
- Geomining.

# Alvito Reservoir



# Geological Heritage





# Heritage values

## Geocultural Heritage

- Millenary culture print the landscape



# Heritage values

## Biodiversity

27 species of plants with more interest for conservation

- 4 Portuguese endemic

**209 species of animals**

- 37 species threaten
- 14 from 17 species of amphibians existing in Portugal
- 19 from the 30 species of reptiles
- 20 from the 26 species of bats
- 16 from 23 species of micromammals
- 14 from 21 species of mammals
- 126 bird species
- 14 species of fish (6 of them threaten)



**What can be the role of a Geopark in the protection of its geological heritage from the threat of national projects supported by local partners?**



# Naturtejo Geopark impact

- International status and recognition through the Geopark brand
- recognition of Portas de Almourão as a site with great nature tourism potential - “village that once was ocean”



# Naturtejo Geopark impact

- Introduction of gold panning, as a tourist product, nowadays a star-product of Foz do Cobrão: *There's gold at Foz!*



# Naturtejo Geopark contributions



4 new municipal geotrails in this geomonument :



- Secrets from Almourão Valley (6,5 km)
- Travel across the bones of Earth (18 km)
- Schist's Path "Vultures Flight" (11 km)
- Conheiras Trail (10,6 km)



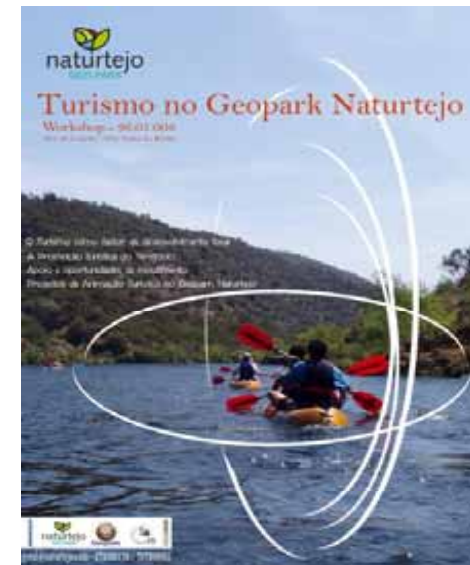
# Naturtejo Geopark contributions

- workshops

*Workshops on gold panning, Workshop on Tourism in Naturtejo Geopark “Tourism as key-factor for local development”*

- meetings

- thematic trails



# Geotourism

## Incentivos Outdoor Company

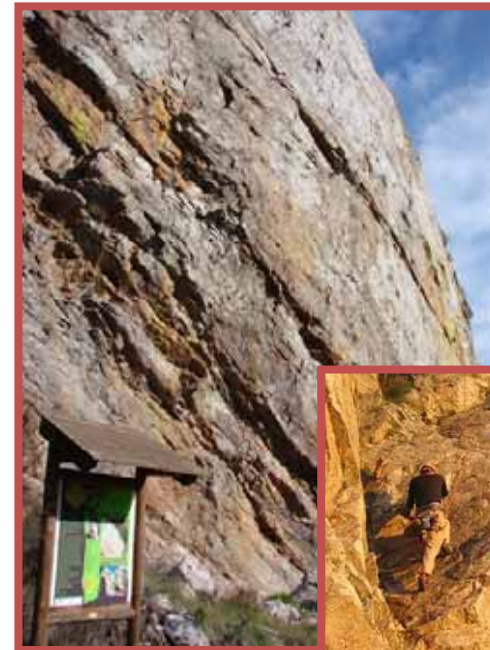




# Geotourism Municipalities



# Geotourism Municipalities



# Local community contribution

★ newspaper  
against  
pro-Alvito

★ promote  
discussion  
about  
prejudice  
reservoir  
clear up



ons about  
heritage and

presented to  
s on Portas  
on

al culture

River



# Local community contribution



- \* newspapers as weapon against the commissions pro-Alvito
- \* promotion of a citizen discussion at Foz do Cibrão about the benefits and prejudices of building the reservoir, contributing to clear up public opinion

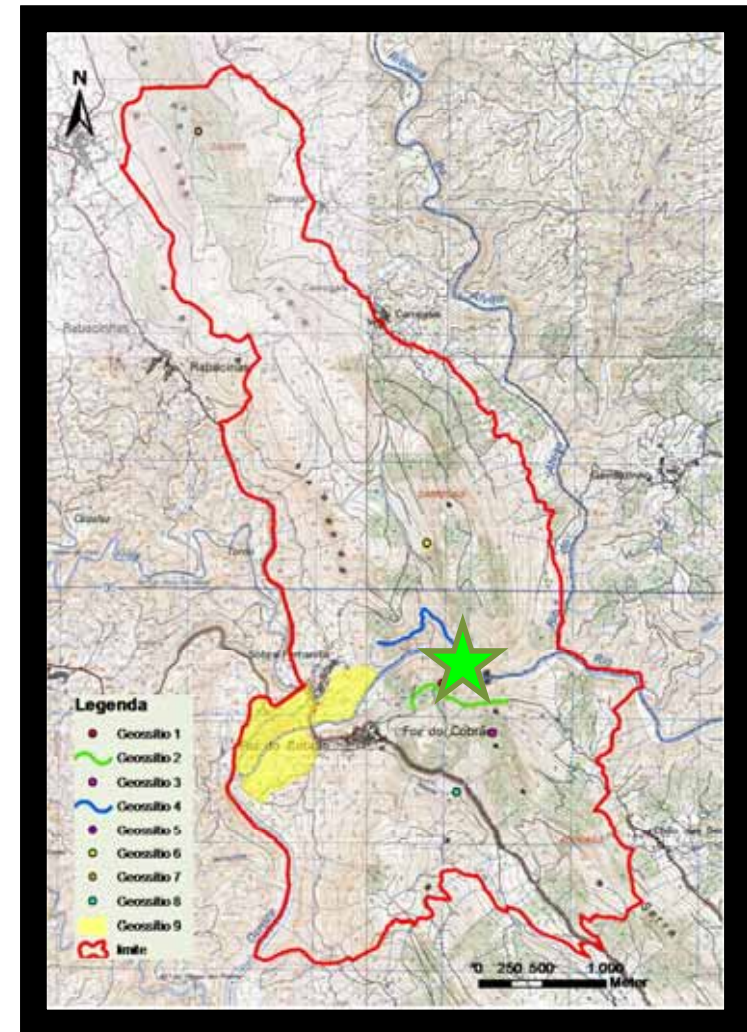


- \* informative actions about Portas de Almourão heritage and potentialities
- \* elucidative reports presented to regional newspapers on Portas de Almourão protection
- \* workshops on local culture
- \* walking trails
- \* rafting at Ocreza River

# Proposal for a Regional Natural Park

under the national law for nature conservation

- Quercus (environmental NGO)
- Geopark Naturtejo
- AEAT (local NGO)



# Interpretation



# Visit and interpretation promotion

**Tourist Programmes**  
3 days / 2 nights



**ARTE RUPESTRE**  
INCLUI

- 2 Noites de alojamento com pequeno-almoço
- Almoço em restaurante típico
- Realização da actividade "Há ouro no Foz" na Aldeia do Xisto Foz de Cobião (técnica ancestral de garimpagem que consiste na procura de ouro nas margens do rio) e passagem pelo miradouro do geossítio Portas do Vale Mourão
- Passeio de barco no rio Tejo até ao Complexo de Arte Rupestre do Vale do Tejo onde existem gravuras rupestres (figuras zoomórficas e antropomórficas)
- Visita ao Centro Ciência Viva da Floresta de Proença-a-Nova: passagem pelas 3 salas temáticas que incluem exposições sobre a Floresta como Fonte de Bem-estar, Vida e Riqueza

**Educational Programmes**



**ARGUMENTO:**  
Alunos e Prof. chegam ao Centro de Ciência Viva da Floresta Nova. Ali participam em diversas actividades relacionadas com a Floresta: visitam exposições, realizam actividades experimentais, fazem jogos, vêem filmes e mais, e mais! É segredo! As personagens têm liberdade de escolha! Você decide... o argumento dentro do Centro de Ciência Viva! Agora é hora de plasmarmos!

Depois de visita ao CCV, partem rumo à povoação de Sobral Fernando e ao percurso e início do trilho pedestre "Segredo do Vale Mourão". No painel introdutório analisam a simbologia dos Percursos Pedestres de Pequena Rota e fazem-se ao caminho, curiosos por descobrir afinal quais os segredos que o Vale Mourão lhes reserva. O trilho acompanha o rio Ocreza, desenvolvendo-se na sua margem direita, mas não é efectuado na totalidade, já que o objectivo é alcançar o ponto onde se faz melhor a observação do geomonumento Portas do Vale Mourão, o principal segredo! Este geomonumento corresponde à garganta do rio Ocreza ao atravessar os quartzitos, que tiveram origem em areias depositadas num fundo marinho há quase 500 milhões de Anos (Ma). Pelo caminho, até lá chegar, vão sendo desvendados outros segredos, tais como, magníficas dobras, zimbros, grifos e outras aves.

Cumprido o caminho de regresso até ao ponto de partida do Trilho, é hora de rumar até à Casa de Artes e Culturas do Tejo de Vila Velha de Ródão para observar mais dois troncos de árvores! Já viram muitos durante o dia, mas a novidade é que estes são dois troncos petrificados, para contemplar e terminar o dia!

**CONTEÚDOS PROGRAMÁTICOS A EXPLORAR**

EDIFÍCIO INTERIORE	EXPOSIÇÃO FLEIÇÃO
<ul style="list-style-type: none"> <li>- Espaço e Povoamento</li> <li>- Paisagem Urbana de Vila Velha de Ródão</li> <li>- Trilho do Rio Tejo de Vila Velha de Ródão</li> <li>- Arte Rupestre</li> <li>- Arte e Ambiente</li> <li>- Espaço de Trabalho e Cultura das escolas</li> <li>- Projecto de intervenção educativa "Onde a natureza inspira a criatividade"</li> <li>- Povoamento rural e urbano</li> </ul>	<ul style="list-style-type: none"> <li>- Paisagem</li> <li>- Arte Rupestre</li> <li>- Paisagem Urbana de Vila Velha de Ródão</li> <li>- Trilho do Tejo</li> <li>- Paisagem e Ambiente</li> <li>- Paisagem Urbana</li> <li>- Paisagem rural</li> </ul>

# Environmental Report 2007

*Environmental Report of the National Program of Reservoirs with High Hydroelectric Potential explains the need to protect the geological heritage of Portas de Almourão*

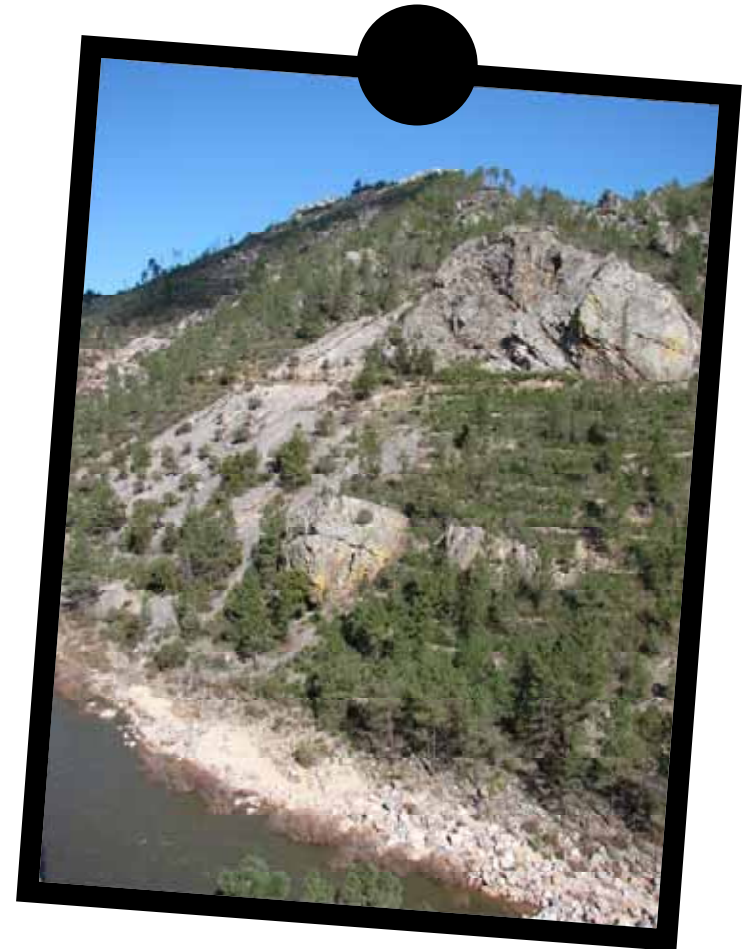


building Alvito Reservoir 1 km upstream, provoking less environmental impacts on the geomonument

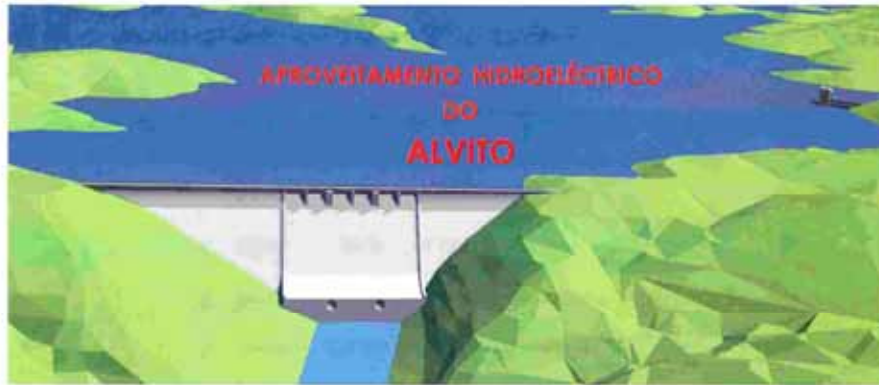


# Environmental Impact Study, 2008

- **“geology” and the “impact upon the geomonument”** - among the most relevant descriptors for environmental impact analysis
- quartzite rocks are considered of **high natural value**



# Change location



Reunião com o Geopark Naturtejo



18 de Maio de 2010

**Meeting with  
Naturtejo Geopark**

**Suspeitos da morte da Borralheira foram postos em liberdade**

**Governo quer mudar localização da Barragem do Alvito**

Queixa Fundaç consult  
Gestor 30 veze outros  
Imposto de Circ novas t  
Musical de regr à Polón  
Idanha i

**“Government wants to change the location of Alvito Reservoir”**

# Naturtejo Geopark contributions

For the *Environment Portuguese Agency* Naturtejo described the importance of valuing *Portas de Almourão* geomonument, the expected regional impacts resulting from the project, and conditions to mitigate those impacts.



Naturtejo pretends a more peaceful coexistence between the energetic/economic resource and the regional sustainable development planned in mid/long term based on endogenous values and Nature (National Strategic Plan for Tourism which includes Naturtejo Geopark).



# Declaration of Environmental Impact, 2010

Declaration was favourable to the building of Alvito Reservoir as in the smaller/less impacting option with 9 conditions to be respected by EDP, including 99 obligations to minimize and remediate irreversible impacts.

## **Obligations controlled by Naturtejo:**

- Follow up of the project by Naturtejo Geopark in order to minimize impacts over the geological heritage;
- Heritage development and valuing of the region;
- Elimination of barriers for ictiofauna.

***Program of Environmental Remediation*** (for the next 10 years)

→ is being worked between EDP, Naturtejo Geopark

# World Tourism Day 27th September 2010

- National celebrations occurred at Naturtejo Geopark



State Secretaries of Tourism and Environment at Portas de Almourão Geomonument



Signature of the protocol between Naturtejo and EDP

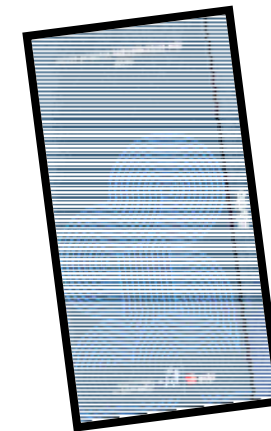
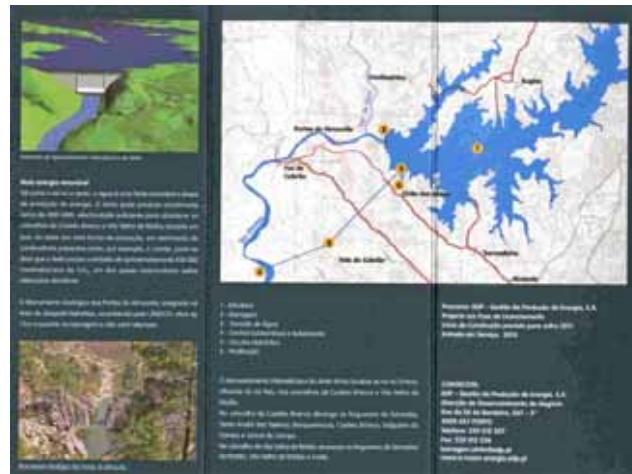
# Conclusions



- The establishment of tourism projects in an increasingly competitive international market implies **deeper care in areas with significant environmental/landscape values**.
- Our strong energetic dependency must be considered with the investment in renewable sources of energy, when fully justified. Portugal must decrease the production of electricity through fossil fuels burning changing for **projects of energetic efficiency and renewable sources of electricity**.
- The impacts of building and management of such sources must allow and facilitate **environment and human quality conservation**, as well as the **development of other sector of local economy**, such as tourism.

# Conclusions

- Naturtejo Geopark has the duty to help enterprises like EDP and Alvito Reservoir, by technical and institutional means, **to find the best solutions to preserve natural and cultural heritage and to contribute for reducing impacts maximizing virtues**



# Conclusions

- several studies were made concerning the geological heritage of Portas de Almourão that gained the interest of municipalities for future development of a regional protected area;
- (geo)tourism products and packages were developed for tour operators and schools, and are being sold with success;
- several communal discussions were participated;
- educational visits for local public were guided and actions were taken using regional media to raise awareness about the importance of the geosite;
- the environmental impact studies were closely followed, discussing with the EDP national electricity company, that culminated with the Geopark declaration letter of conditions for mitigation and remediation of impacts.







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- For the first time in Portugal, the need to protect the geological heritage changed the location of a large-scale building investment, and a geological-related management structure can control mitigation procedures resulting from the project.

**Thanks for your attention...**

