# SCIENCESPRINGDAY



#### Departamento de Ciências e Tecnologia da Biomassa

#### Contributions to a model for sustainable energy security in Portugal







### Nuno Monteiro

Advisor: Professor Ana Luísa Fernando (MSc, PhD)

Short CV: Electrical Engineer (IPL-ESTG); MSc in Energy and Environment (IPL-ESTG); PhD student in Energy and Bioenergy (FCT-UNL)

#### **Objectives**

- Establish a set of energy security indicators for Portugal, considering the four dimensions of energy security (availability, accessibility, acceptability, affordability)
- With the chosen indicators, build a model to evaluate a sustainable energy security strategy for different scenarios
- Evaluate the impacts of energy efficiency and renewable energy policies in the national energy security situation



## Oil reserves according to country risk



#### Long term (1960-2012) price evolution for oil in the international markets



#### Methodology

- Selection of a set of indicators from a number of bibliographic sources, such as the International Energy Agency,
- Design of a model for quantification of the different dimensions of energy security
- Testing the model for a number of different likely scenarios
- Evaluating the impact in energy security of better energy efficiency and/or renewable energy policies

#### **Expected Results**

- It is expected that the model can contribute to evaluate the current energy security situation and its evolution.
- The application of the model to other countries can facilitate the comparison between different realities, policies and strategies
- The results of the simulations can help to determine the impact of increased efficiency in the energy security situation
- It is also expected that a sustainable use of endogenous energy resources could lead to an improved energy security