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## ***COST ACTION GREENERING – DATA COLLECTION***

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**First name, Family Name:** Paulo Brito

**Type (Academic or Industrial):** Academic

**Country:** Portugal

**Leadership position in the COST:** Participant on CA18224

**Working Group in which you are involved:** WG1

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**Laboratory/Company:**

VALORIZA – Research Centre for Endogenous Resources Valorization  
Polytechnic Institute of Portalegre

**Laboratory/Company info:**

VALORIZA is a multidisciplinary Research Unit (RU), whose scope of activity and strategic objectives converge towards the valorisation of endogenous resources, in compliance with the principles of circular economy, in low-density territories with a rural and cross-border matrix. The Research Unit focuses on the research of valorisation of wastes and bioenergy, sustainable production and environment and valorization of low-density crossborder territories.

**Link to the home page of the Laboratory/Company:**

[www.valoriza.ippportalegre.pt](http://www.valoriza.ippportalegre.pt)

**Fields of expertise:**

- ***Development of waste recovery technologies***
  - a) evaluation of biomass resources energy potential by application of GIS;
  - b) demonstration of technological feasibility of energy recovery of waste based on industrial pilot units, including dryers, mills, densifiers, thermal gasifiers and fermenters, having biomass;
  - c) economic evaluation of waste energy recovery in small industrial units
- ***Process numerical and analytical tool***
  - a) development of energy-economic models to assess emissions, energy and economic outcomes from several scenarios of Portuguese and European policies to mitigate greenhouse gases;
  - b) analysis to fluid dynamic problems found in the engineering practice of waste-to-energy processes
- ***Hydrogen as energy vector***

**5 Main publications or patents:**

- Ferreira, S., Monteiro, E., Brito, P., Vilarinho, C., (2017). Biomass resources in Portugal: Current status and prospects. *Renewable and Sustainable Energy, Reviews*, 78, 1221-1235.

<http://valoriza.ippportalegre.pt/papers/RenewableSustainableEnergyReviews.pdf>



- Sanchez-Llerena, J., Lopez-Piñeiro, A., Albarran, A., Peña, D., Becerra, D., Rato-Nunes, J. M., (2016). Short and long-term effects of different irrigation and tillage systems on soil properties and rice productivity under Mediterranean conditions. *European Journal of Agronomy*, 77, 101-110.  
<http://valoriza.ipportalegre.pt/papers/EuropeanJournalAgronomy.pdf>
- Couto, N., Silva, V., Monteiro, E., Teixeira, S., Chacartegui, R., Bouziane, K., Brito, P.S.D., Rouboa, A., (2015) Numerical and experimental analysis of municipal solid wastes gasification process. *Applied Thermal Engineering*, 78, 185-195.  
<http://valoriza.ipportalegre.pt/papers/AppliedThermalEngineering.pdf>
- Sérgio Ferreira, Eliseu Monteiro, Paulo Brito, Carlos Castro, Luís Calado and Cândida Vilarinho, Experimental Analysis of Brewers' Spent Grains Steam Gasification in an Allothermal Batch Reactor, *Energies* 2019, 12, 912;  
<https://doi.org/10.3390/en12050912>
- Tayyebi, A., Tayyebi, A., Vaz, E., Jokar Arsanjani, J., Helbich, M., (2016). Analyzing crop change scenario with the SmartScape™ spatial decision support system. *Land Use Policy*, 51, 41-53.  
<http://valoriza.ipportalegre.pt/papers/LandUsePolicy.pdf>

### **Collaborations:**

### **Facilities:**

"BioBIP - Bioenergy" ([www.biobip.pt](http://www.biobip.pt)) - Semi-industrial experimentation center, with laboratory support, of technologies in the bioenergy area, using areas in the industrial warehouse or spaces for incubation, complemented with use of laboratory resources available in the VALORIZA. The pilot scale equipment for processing and treatment of waste/biomass, are the following:

- Biomass mill (1000 kg/h)
- Rotary biomass dryer (3 m<sup>3</sup>/h)
- Pelletizer (50 kg/h)
- Unit of gasification and energy production (15 kw, 20 Kg/h)
- Biomass boiler (30 KW)
- Anaerobic biodigester (2 m<sup>3</sup>)
- CPC reactor
- Gasification Pilot Plant is a fluidized bed gasifier (100 Kg/h)