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INTRODUCTION

Over the centuries there has been a growing trend of societies and it is possible to verify their economic growth. This growth has provided an increased pressure on natural resources, often over-reaching the boundaries of each country, which has called into question the level of environmental sustainability in different countries (WWF, 2010).

Sustainability is understood as a complex concept involving ecological, social, economic dimensions and temporal urban processes. Therefore, Firmino (2009) suggests that the ecological footprint (EF) allows people to establish dependency relations between human activities and the natural resources required for such activities and for the absorption of waste generated. According to Bergh & Verbruggen (1999) the EF is an objective, impartial and one-dimensional indicator that enables people to assess the sustainability.

The Superior Schools have a crucial role in building the vision of a sustainable future as a reality, because in transmitting values and environmental principles to his students, are providing that they, in exercising his professional activity, make decisions weighing the environmental values. This ensures improved quality of life (Côrrea, n.d.).

The present study aims to determine the level of environmental sustainability of the Academic Community of Lisbon College of Health Technology (ESTeSL), by calculating the EF, and describe whether a relation between Footprint and various socio-demographic characteristics of the subjects.

MATERIAL AND METHODS

The research took place in ESTeSL, institution that belongs to the Polytechnical Institute of Lisbon. It was used a sample of 409 individuals from the academic community composed by students, teachers, staff and suppliers' workers full-time in ESTeSL, corresponding to 17% of the target population.

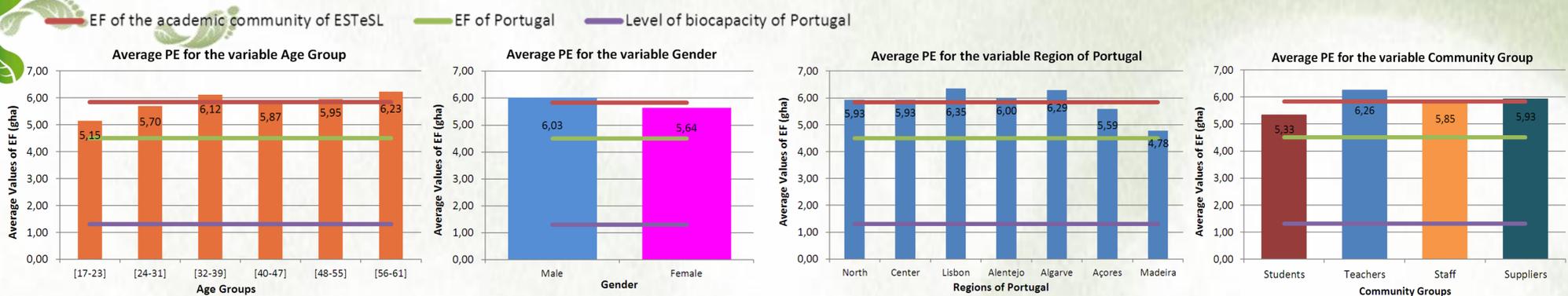
The variables to take into consideration were grouped into two major groups, socio-demographic variables such as age, gender and residence, and educational variables, such as community groups, courses and scientific area.

As a method of data collection was used an online questionnaire applied to the entire academic community of ESTeSL in 2011.

The EF values were determined through the answers given by respondents. Each answer option causes a distinct environmental impact. In this way, each of those answers was assigned a different quote, being given greater quote to replies with greater environmental impact.

Obtained the total score of each questionnaire (score), the conversion to global hectares were proceeded according to the Questionnaire of the Group for Environmental Studies of School of Biotechnology, Catholic Portuguese University.

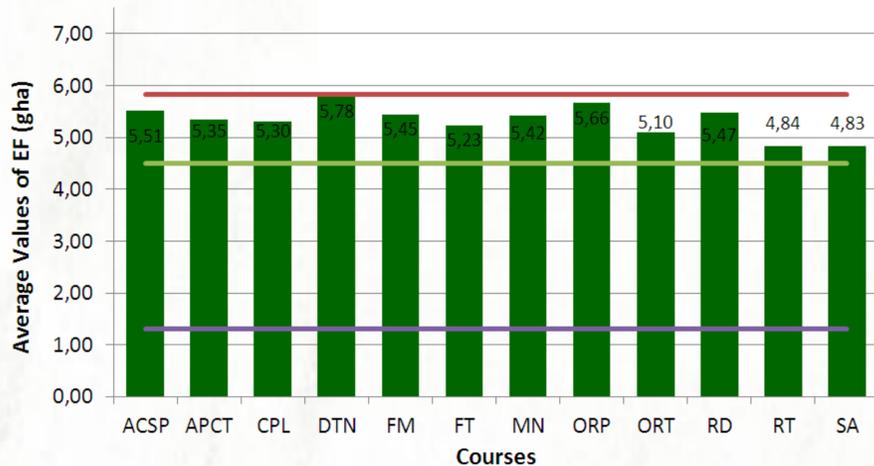
RESULTS AND DISCUSSION



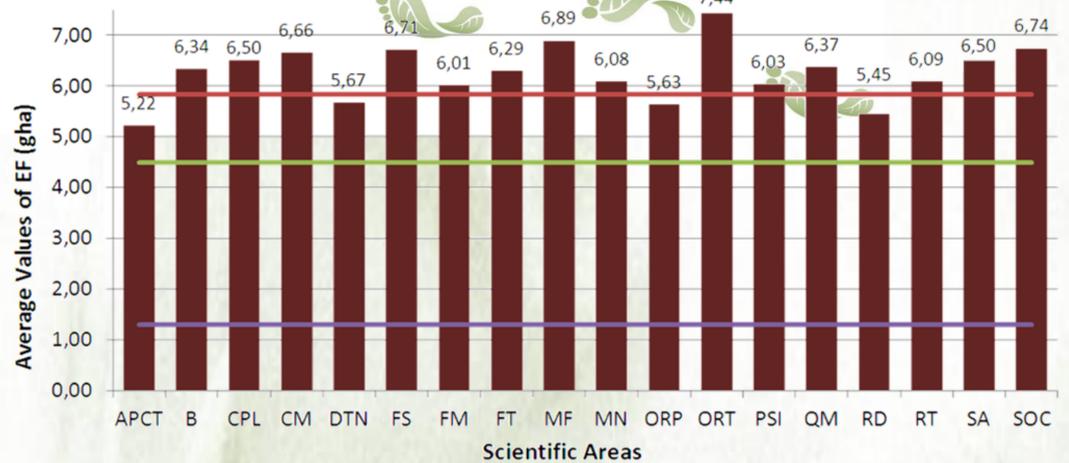
The EF average of ESTeSL is 5,84 global hectares (gha). Comparing this value with the value of Coimbra College of Health Technology (ESTeSC), it is concluded that ESTeSL presents a value of EF lower than the ESTeSC (5,90 gha), in the year 2008 (Ferreira et al., 2008). However, in the study published in 2010, it is noted that the ESTeSC has decreased the value of their EF, being now 4,5 gha. This decrease may be due to the fact that ESTeSC became an Eco-School in 2008 (Sá et al., 2010).

According to the analysis by gender, male population (n=82) has an average value of EF (6,16 gha) above the average value calculated for the female population (n=327) (5,76 gha), which suggests that women are behaving more environmentally sustainable than men (T-Student Test; $\alpha > 0.05$). This may be related to behavioral differences that are notorious among men and women. This sensitivity and concern are reflected also in relation to environmental behavior, because the female population has more pro-environmental positions behaviors when compared with the male population (Barreiro et al., 2004). Teachers (n=61) have a higher EF (6,26g ha) than students (n=319) (5,33 gha). This may be because most teachers travel by car, while students use public transport or do it on foot.

Average PE for the variable Course (students)



Average PE for the variable Scientific Areas (teachers)



ACSP (Clinical Analysis and Public Health); APCT (Biomedical Sciences in Histochemical Pathology); B (Biology); CM (Medical Sciences); CPL (Cardiopneumology); DTN (Dietetics and Nutrition); FM (Pharmacy); FS (Physics); FT (Physiotherapy); MF (Morpho-Functional); MN (Nuclear Medicine); ORP (Prosthetists and Orthotists); ORT (Orthoptics); PSI (Psychology); QM (Chemistry); RD (Radiology); RT (Radiotherapy); SA (Environmental Health); SOC (Sociology).

Students of Environmental Health (SA) (EF=4,83 gha) and Radiotherapy (RT) (EF=4,84 gha) stand out positively, showing the lower values of EF, while students of Dietetics and Nutrition (DTN) (EF=5,78 gha) and Prosthetists and Orthotists (ORP) (EF=5,66 gha) show the highest values of EF. The EF value determined for the Environmental Health can be related to the fact that this course be solely directed to the intervention and improved environmental conditions with the purpose to improve the quality of life of population groups.

The average values for EF of teachers who replied to the questionnaire, distributed by the corresponding scientific areas, indicate that the scientific area of Orthoptics shows the highest value of EF (7,44 gha), followed by Morpho-Functional (MF) with 6,89 gha. On the other hand, Biomedical Sciences in Histochemical Pathology (APCT) and Radiology (RD) have lower values, respectively with 5,22 gha and 5,45 gha.

CONCLUSIONS

For higher education institutions have a proactive role in the development of a sustainable future, it is essential that they are environmentally sustainable. Currently, the academic community of ESTeSL is not environmentally sustainable, since your EF is greater than the value of the biocapacity of Portugal, consuming more resources than those which the country can ensure. With the implementation of the Eco-Schools Programme, this situation will eventually tend to be changed, as happened in ESTeSC, where they have observed a significant decrease in the value of EF. The awareness of all sections of the academic community, especially those who have ESTeSL a EF greater, it is very important for the school to be environmentally sustainable.

REFERENCES

- WWF. Planeta Vivo 2010 – Biodiversidade, biocapacidade e desenvolvimento [Internet]. Suíça: 2010; [cited 2011 Fev 26]. Available from: http://assets.panda.org/downloads/lpr_2010.pdf
- Côrrea, V. As Instituições de Ensino Superior e a Gestão Ambiental [Internet]. n.d.[cited 2011 Fev 26] Rede Internacional de Comunicação CTA-JMA. Available from: <http://www.giga.ea.ufrgs.br/Artigos/gestaoambiental.doc>. Portuguese.
- Firmino, et al. A relação da pegada ecológica com o desenvolvimento sustentável /cálculo da pegada ecológica de Toribaté [Internet]. 2009 [cited 2011 Mar 25] Caminhos de Geografia Uberlândia v. 10, n. 32, pp 41 – 56. Available from: <http://www.seer.ufu.br/index.php/caminhosdegeografia/article/viewFile/10746/6375>. Portuguese
- Bergh, J. & Verbruggen, H. Spatial sustainability, trade and indicators: an evaluation of the 'ecological footprint' [Internet]. 1999 [cited 2011 Mar 25] Ecological Economics 29 (1999) 61–72. Available from: http://www.fnu.zmaw.de/fileadmin/fnu-files/courses/ere4_val/eeberghverbruggen.pdf. English
- Ferreira, A. et al. Pegada Ecológica da Escola Superior de Tecnologia da Saúde de Coimbra - Um indicador de sustentabilidade [Internet]. 2008. [cited 2011 Fev 2006]. Available from: http://saudeambiental.net/wp-content/uploads/PEGADA_ECOLOGICA_ESTESC.pdf
- Sá, N. et al. Pegada Ecológica da ESTeSC [Internet]. 2010. [cited 2011 Jun 22]. Available from: <http://www.estescoimbra.pt/images/admin/file/Sa%C3%BAde%20Ambiental/Poster%20Pegada%20Ecol%C3%B3gica.pdf>
- Barreiros, F. et al Sentimentos e comportamentos em matéria ambiental: Detecção das diferenças entre géneros e grupos profissionais [Internet]. Leiria; 2004 [cited 2011 Jul 29]. Available from: <http://mportugal.homestead.com/files/FMjenv.pdf>