

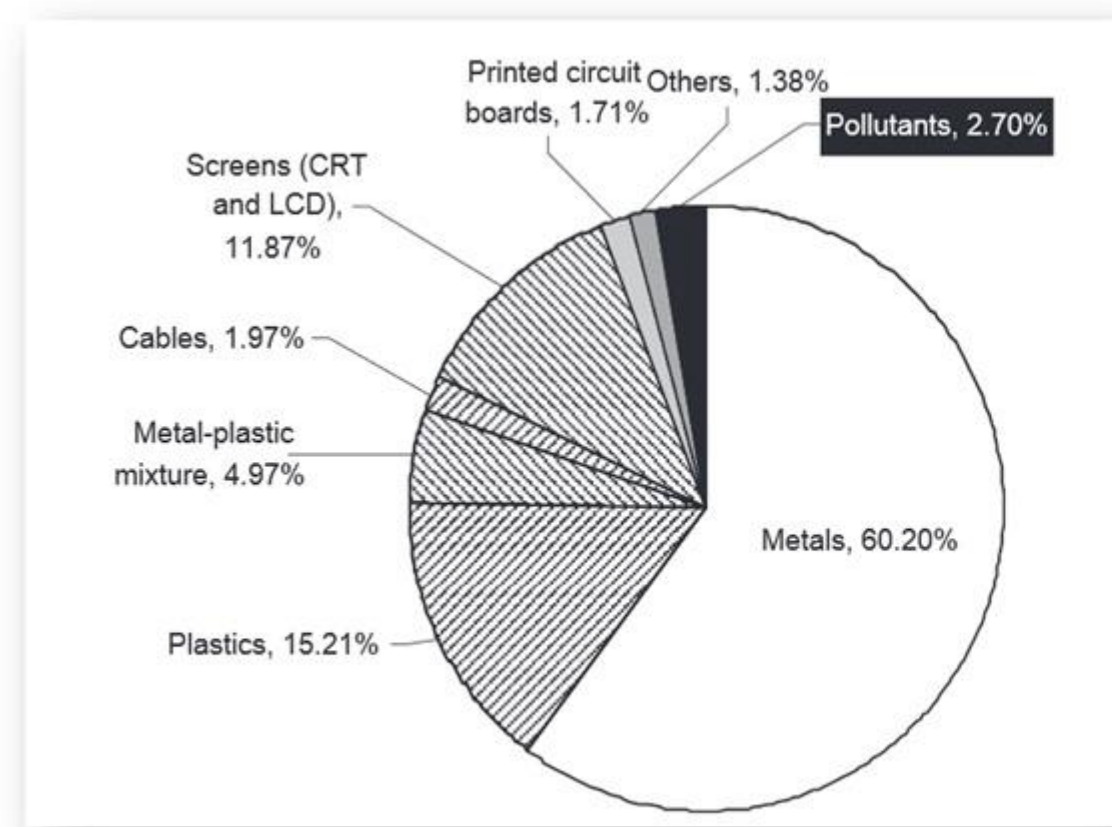
MIGUEL MARTINEZ DE AGUIRRE MIRAL (Supervised by Professor Sue Grimes)

Department of Civil and Environmental Engineering, Imperial College London

1. INTRODUCTION

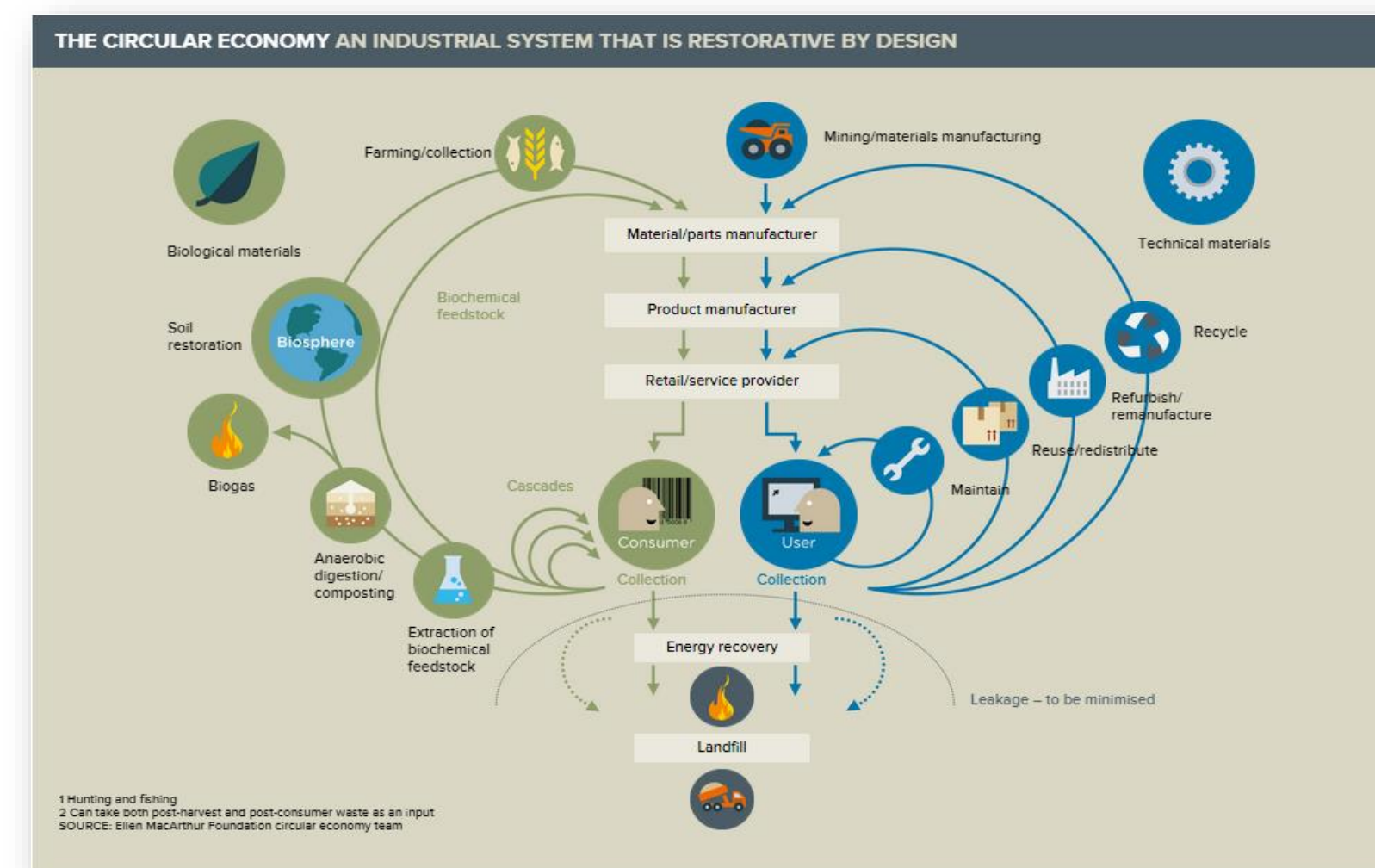
Waste Electrical and Electronic Equipment is the fastest growing waste stream worldwide, driven by consumer demands for electronic goods. WEEE is a resource-rich stream containing 7 of 20 EU critical materials. Moving from a linear economy to a circular economy is basic to recover the valuable components contained in this heterogeneous waste. The purpose of the study, therefore, is to understand the challenges for this transition and in this context to understand the behaviour of different social groups in Spain and the UK.

2. WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT



3. CIRCULAR ECONOMY

- It is the **alternative** to the linear economy (make, use, dispose).
- It is based on keeping physical resources in “circles” or “**loops**”.
- It entails the development of a waste policy and resource efficiency, as well as extending the life of the products.
- The **main strategies** are recycling, refurbishment, remanufacture and reuse.
- **Design** is the stage of the life cycle that has the strongest influence on environmental impacts.



4. CASE STUDY-SURVEY

Three questionnaires were compiled with a focus on fast consumer electronic goods. They were distributed to three different groups of people:

- 55 students in Spain aged 17-25 (named “*Young Spain*”)
- 21 adults in Spain, workers (named “*Adult Spain*”)
- 58 students in the UK aged 17-25 (named “*UK*”)

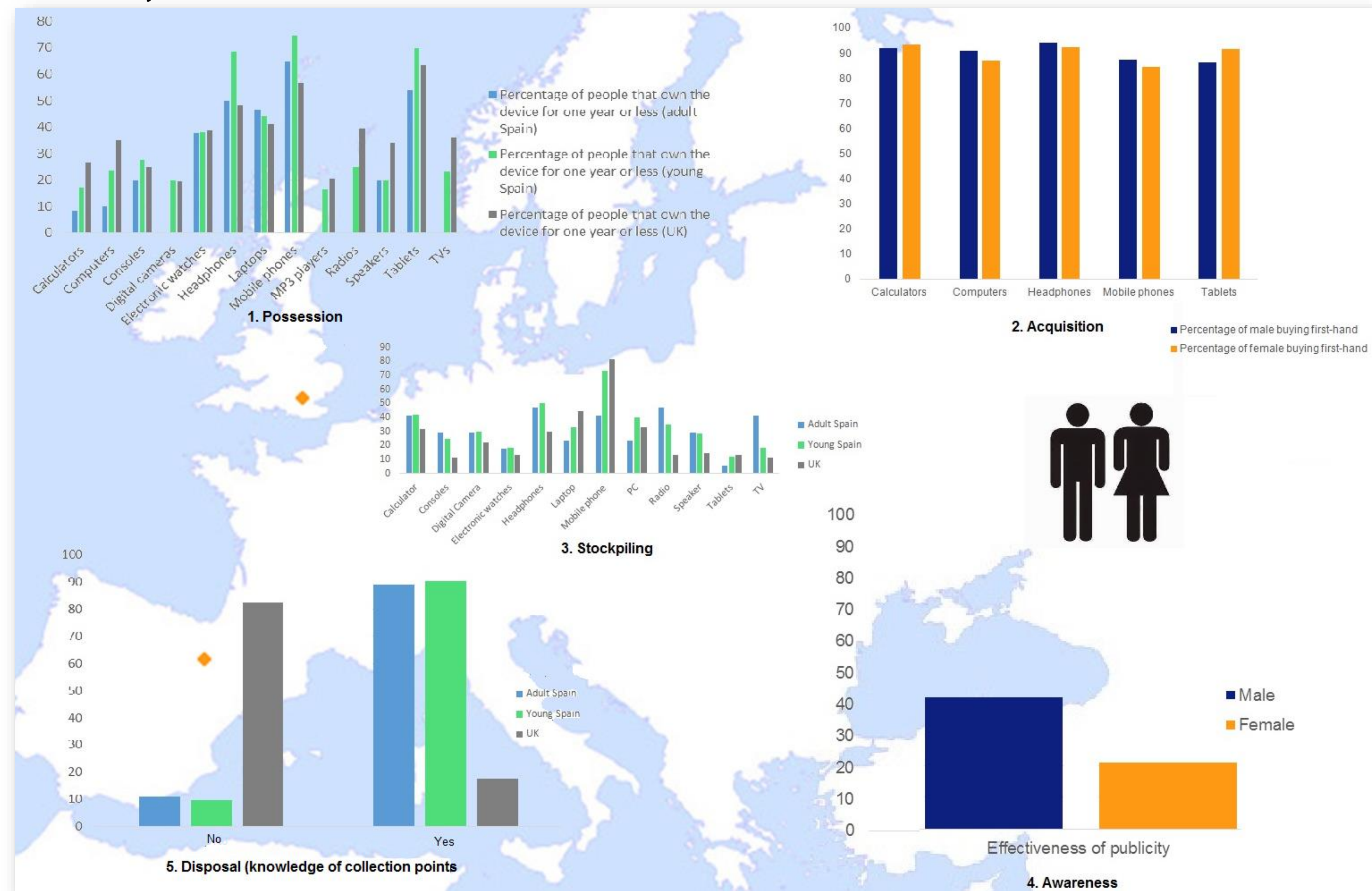
Interviews with shops that sold second-hand goods were conducted in Spain.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my supervisor Professor Sue Grimes for her guidance and constant encouragement. Her implication and effort have been essential throughout the course of this project.

5. DATA ANALYSIS

Data handling and analysis was made using Excel. Interpretation was made under the five key headings identified in this work: possession, acquisition, stockpiling, awareness and disposal. Comparisons were done by age, gender and country.



6. CONCLUSIONS

The identification of challenges was expressed at three levels of stakeholder

Challenge for the owners of electronic devices	Challenge for governments, local authorities, and the waste industry	Challenge for the electronics manufacturing industry
<ul style="list-style-type: none"> <li>•Encourage owners not to stockpile end-of-use devices.</li> <li>•Encourage owners to trust the secondary market for purchases and disposal.</li> <li>•Encourage owners to use the collection points.</li> <li>•Encourage people to pay attention to the awareness campaigns of sustainability.</li> </ul>	<ul style="list-style-type: none"> <li>•Improve the effectiveness of publicity. Design specific campaigns for each social group.</li> <li>•Penalise those retailers refusing to take back WEEE.</li> <li>•Increase the recycling rate.</li> <li>•Develop a better legislation and extend the existing one.</li> </ul>	<ul style="list-style-type: none"> <li>•Promote the eco-design.</li> <li>•Reduce the exploitation of critical materials.</li> <li>•Develop uses for the recovered fractions.</li> <li>•Improve the lifespan of the devices.</li> </ul>

REFERENCES

Macarthur, E. (2013-last update, Circular Economy. Interactive System Diagram. Available: <http://www.ellenmacarthurfoundation.org/circular-economy/circular-economy/interactive-system-diagram> [3/13, 2015].

Widmer, R., Oswald-Krapf, H., Sinha-Khetriwal, D., Schenellmann, M. and Böni, H., 2005. Global perspectives on e-waste. *Environmental Impact Assessment Review*, 25(5), pp. 436-458.