

## **Leapfrogging the Provision of Light on Low Income Households Through a Product Service Systems (PSS): a Case Study in Brazil**

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The present paper reports results of the LEDHIS Project, a research project developed in Brazil which focused on the development of a product-service system for the provision of light on low income households using LED technology. From 2001 to 2011 the country has seen 10% poorest of the population enjoying a 90% increase in real income, with a direct effect on their consumption patterns as they are thirsty for social equity, which is still strongly perceived as linked to material possessions. Despite various positive social and economical implications the situation results on a massive environmental impact. However, on this context of transition to new consumption patterns, there is also an opportunity to sustainability with the introduction of new business models and technologies that could enable a leapfrog towards more dematerialized alternatives of well being. In line with this perspective, the LEDHIS Project investigates alternative ways for providing better lighting on low income households with lesser resource consumption. The product service system developed on the project intended to shift consumption from incandescent light directly to LED lighting, jumping the orthodox path that puts fluorescent light as the next light technology. The project is funded by the Brazilian Innovation Agency (FINEP) and developed in the partnership between Paraná State Housing Agency (COHAPAR) and the Design & Sustainability Research Centre, Paraná Federal University. Despite the environmental benefits of LED lighting in comparison to fluorescent solutions and, also, despite its economical benefits during the usage phase due to lower energy consumption, the pay-back is still too long to enable its acquisition by low income consumers. Thus, a solution based solely on the product would be enough to enable the desired leapfrog, implying a system shift with the introduction of new services and new arrangements among stakeholders. LED lighting requires a different approach from the previous technologies since it offers the opportunity of embedding intelligence on the lighting system through IT and electronic devices. Also, it evolves quite quickly and upgrades are likely to be required since it has long life span, which could reach up to 25 years. The product-service system developed on the project explores such potential, having adopted a platform of LED light artefacts that have enabled the involvement of local stakeholders on the production, installation, maintenance and recycling.