

Design of sustainable products to be produced in low-income communities in developing countries

Julio C. Augusto da Silva, National Institute of Technology, Brazil

This article discusses the design for sustainability from the perspective of generating work and income, fair trade and reduction in environmental impact of consumer products. It will approach an experience of developing a line of low-impact products to be manufactured in low-income communities, and from this experience, outline some considerations on design for sustainability in the Brazilian reality.

The experience came from a partnership between a private representative company, a public institution for research and development in design and a workers' association of a low-income community in Rio de Janeiro, Brazil. The production chain involved extends from the urban community to rural producers who practice sustainable family farming, comprising small innovative technology companies which produce low-impact raw materials.

This production chain was formed around the products developed, whose characteristics seek sustainability, with added value, but that could be produced inside the community with the technological resources they already have or with low investment.

The goal that guided the project was to generate work and income for the poorest sections of society, but with a non-welfarist approach.

Another challenge was the manufacturing of medium complexity products in communities, overcoming the commonly accepted notion that production in slums should be limited either to simple products with low added value or craftwork requiring talent and skill, solution which does not create jobs overall.

Another challenging aspect of the project was to develop a line of low environmental impact products in a category which has traditionally limited durability, thus high impact, the freebies. This type of products is usually disposed of in a short time and produced in large quantities, mostly in China, without any kind of return for the society.

The products developed were a set of low environmental impact freebies, with flexible manufacturing, customizable and with innovative design. Currently the line includes three products: USB flash drive in organic plastic, car trash bags and eco-friendly bags (replacing disposable bags), in discarded banner cloth. Other products are in planning stage.

The USB flash drive uses castor bean-based polyurethane, replacing petroleum-based plastics. The castor bean-based PU is a material produced from a renewable, biodegradable and socially fair resource. This material is produced by small innovative technology companies which employ raw materials coming from sustainable family farming.

The bags employ discarded banner cloth, a high resistance material, but applied in a product with a life cycle as short as a few weeks. The banners are commonly used to promote events and are discarded as soon as they end, that is, they have a rather short life cycle of only a few weeks. The reuse as bags takes advantage of the resistance and durability of the material.

Another positive aspect for the environment is the manufacturing in urban communities. Besides generating income for the poorest sections of society, this solution also approximates production and consumption, reducing impacts of distribution.

Another environmental innovation of these products when compared with the traditional freebies is the introduction of the life cycle mentality. Not only the materials used are recycled, recyclable and / or biodegradable, but the entire product life cycle is worked out, including the return at the end of service life for components whose disposal as household trash may produce toxicities.