

## **1 – Ecodesign examples**

### **1-1 Ecodesign example at MAKSS Packaging**

MAKSS is a manufacturer of cardboard packaging materials in Kampala, Uganda, who took part in the Ecodesign Workshop, held in August 2002 at the UCPC in Kampala (see Figure 1).

Before and during the workshop, two company visits to MAKSS Packaging were made. The production of packaging boxes for fruits, chicken, fish and flowers was investigated – mainly focusing on product development aspects.

The design of most of the boxes was rather old – the fruit box, for example, had not changed for almost 20 years. In the meantime, transportation has changed and the boxes nowadays have to meet different requirements. The ratio of the packaging to the mass of the packed contents can be seen as a key indicator. At the moment, the mass of the corrugated cardboard box amounts to about 10 to 15% of the contents mass, depending on the packed contents, e.g. fruits or beans, and this ratio is even worse with flowers. Since the goods are first transported by lorries on rough roads and are later shipped by plane, for instance to Europe, the corrugated cardboard boxes need to be very robust and lightweight at the same time. The technology provided by lightweight engineering can help to reduce the material input for the sake of environmental considerations but also to reduce costs related to expensive air transportation.

First ideas were generated during the workshop, such as strengthening the boxes with stiff edges and stiffeners and reducing the thickness of the corrugated cardboard from five layers to three layers. Other ideas, such as integrating the lid into the box design, aimed also at reducing the total mass of the box.

Another important aspect was an intensive dialogue with the different customers (e.g. flower producer) to determine their requirements and adapt the design of the boxes accordingly. This can reduce costs and the environmental impact at the same time.



Figure 1: Ecodesign Workshop at the UCPC

After the one-week workshop, MAKSS was further supported by the UCPC and, owing to this support, the following results could be achieved.

MAKSS will launch two redesigned products on the Ugandan market: a 5 kg fruit box and a flower box for export. Both have been redesigned according to Ecodesign criteria. The benefits achieved by the redesigned boxes can be summarized as follows:

- Less material used;
- Less waste generated;
- Less costs caused;
- Better product designed.

In the case of the fruit box (Figure 2), the following improvements could be achieved by applying Ecodesign:

- Improved resource efficiency: weight is reduced by 11%.
- Improved production process: the production of the box involves one production process less since the new fruit box is a one-piece box. Off-cuts are used for making pads for other boxes.
- Cost reduction: the box is sold at a cheaper price to the costumer, cargo charges are lower since it is lighter.
- Functionality and costumer satisfaction: stability and ventilation are excellent. The easy locking system saves handling time. A one-piece box is easier to handle, less space is needed for packing. No imbalance in stocks between tops and bottoms can occur.



Figure 2: Fruit boxes – old and new design (Mwesigye, P., UCPC flyer)

In the case of the flower boxes (Figure 3), the following improvements could be achieved by applying Ecodesign:

- Improved resource efficiency: weight is reduced by 12%.
- Improved production process: the production of the box involves one production step less since the bottom is three-ply instead of five-ply. The box is self-locking and does not require any tape or staples.
- Cost reduction: the box is sold at a cheaper price to the costumer, cargo charges are lower since it is lighter.
- Functionality and costumer satisfaction: this design provides a higher degree of ventilation for the flowers, thus the product is better protected, the flowers will arrive in better condition and consequently have a higher value.



Figure 3: Flower boxes – old and new design (Mwesigye, P., UCPC flyer)