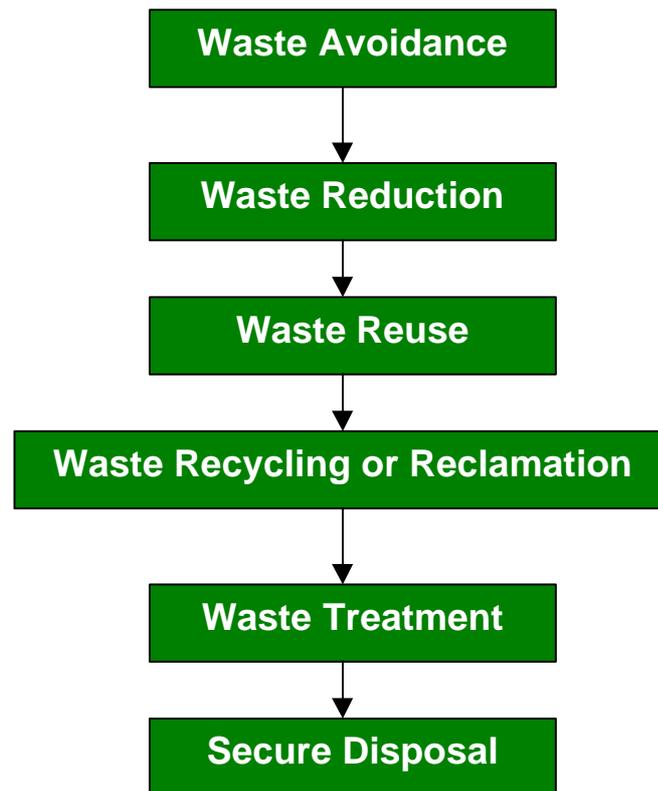


## WASTE MANAGEMENT HIERARCHY

The waste management hierarchy is used as an over-riding principle in respect to waste management strategy and policy development. This hierarchy is widely accepted and used at an international level, and is represented in the figure below.



### WASTE AVOIDANCE AND REDUCTION

As the first principle of the waste management hierarchy, a clear emphasis must be placed on determining how a waste stream can be avoided altogether, or at least substantially reduced. These principles are imbedded in the practice of cleaner production, with industries finding that waste avoidance through product substitution or process change can often translate into substantial economic benefits.

By clearly focusing on waste avoidance and reduction as opposed to end of pipe treatment and disposal technologies, the final 'problem' is reduced accordingly, as well as the associated costs.

## **RE-USE**

The principle of reuse is one that is well applied in the developing country context. Reuse is re-utilising waste material without making substantial changes to its form. Repair goes hand in hand with reuse, revitalising the utility value of the product through applying skills and labour. Reuse can also be applied to using a waste product for a new use. For example, making seedling pots from plastic bottles or liquid paperboard cartons. Reuse is a principle that tends to be overlooked as affluence and consumerism grows.

## **RECYCLING**

Recycling is a process that utilises waste materials and applies various technologies to change the material into useful feed stocks for industrial or manufacturing processes. Recycling is further down the hierarchy due to the higher costs involved in collection, transport and reprocessing.

The recycling industry can sometimes be volatile, with market fluctuations creating uncertainty within the industry. Recycled materials are usually competing against virgin products, which are often relatively cheap. Virgin materials do not have the environmental costs of their product built into the price, making it difficult for recycled resources to compete. This is particularly the case for low value plastics and recycled paper. However, in many cases, recycling makes good environmental and economic sense.

## **TREATMENT AND SECURE DISPOSAL**

This segment of the waste hierarchy is the one with the highest costs, and the highest environmental risks. There is a range of options put forward by various proponents for the following technologies:

- Pre-treatment for waste stabilisation
- Incineration (sometimes incorporating waste to energy)
- Sanitary landfilling

Particularly landfilling and incineration options have environmental risks as well as high capital input requirements. For many communities the choice for final disposal is often based on the cost of establishing and operating these facilities. Internationally the waste management industry supports both technologies provided that both are operated to the highest environmental standards possible. This is achieved through employing best practice design, management and monitoring criteria.

However, by applying all of the higher principles of waste management, the problem of residual waste disposal can be substantially minimised.