

Editorial

The need for reducing plastic shopping bag use and disposal in Africa

Plastic shopping bags are widely used for transporting a range of small consumer goods, and in some regions, also serve secondary roles for conveying drinking water¹ and disposing of human and other domestic wastes². While annual production and use statistics are not available from industry sectors, environmental groups estimate that between 500 billion and 1 trillion plastic bags are used globally each year³. Since their inception, uncontrolled disposal of these bags has been causing environmental problems worldwide, and many municipal, regional, and national governments are beginning to take action. The problem is particularly acute in Africa due to its unique set of socio-economic and political conditions. Similarly unique solutions will be needed to solve this complex issue.

In a number of African countries, plastic bag pollution is causing severe environmental and health damage that manifests itself in a number of ways (Figure 1). The bags are also used for disposing of human waste in city streets, in gutters, and on neighbouring roofs. This leads to an "out-of-sight, out-of-mind" philosophy that superficially and incorrectly portrays the absence of the existing health risks compared to otherwise "open" human waste disposal. Bags can block storm drains and sewage systems, leading to flooding and increased spread of disease. Water trapped in the bags also provides an ideal breeding ground for mosquitoes, raising the risk of malaria transmission⁴. Since most landfills are not routinely covered with soil in Africa, the bags are easily transported around the countryside where wildlife and livestock consume the materials⁵. Numerous cases of animal injury and death as a result of this practice have been reported. Where the bags are burned either for energy or mass reduction purposes, heavy metals and toxic organic compounds (e.g., polychlorinated dibenzo-*p*-dioxins and furans [PCDD/Fs; commonly referred to as "dioxins"] and polyaromatic hydrocarbons [PAHs]) can be produced. In agricultural areas, the bags can interfere with water and air movement through the soils, and thus decrease productivity of much-needed farmlands². And perhaps of greatest consequence, regardless of their location or end use, the bags require unsustainable petroleum-based raw material inputs for their production and once produced require centuries or millennia to decompose.

A number of regulatory instruments have been used worldwide to reduce the plastic bag problem, ranging from traditional command and control approaches such as bans, voluntary codes of practice and marketing of alternative bags, to economic tools such as taxes or levies. The African countries of Eritrea, Zanzibar, and Somaliland have banned plastic bags^{3,6,7}, as have China, Bangladesh, Taiwan, Thailand, Papua New Guinea, Nepal, Philippines, and several states in India^{3,8,9}. Minimum thickness rules (*i.e.*, a partial ban) exist in South Africa (which also applied a tax to the thicker non-banned bags), Rwanda, Uganda, and Kenya, and are being considered in Ethiopia, Ghana, Lesotho, and Tanzania, in an attempt to reduce the use of the most-disposable thin bags^{4,8}. In South Africa, retailers supplying the

¹ Simpson, S. (November 30, 2007). Clogged by plastic bags, Africa begins banning them. *The Christian Science Monitor*. Available at <http://www.csmonitor.com/2007/1130/p01s04-woaf.htm>.

² Njeru, J. (2006). The urban political economy of plastic bag waste problem in Nairobi, Kenya. *Geoforum* 37, 1046-1058.

³ CBC News (March 28, 2007). Blowing in the wind: Global moves against shopping bags. Canadian Broadcasting Corporation. Available at <http://www.cbc.ca/news/background/environment/shoppingbags.html>.

⁴ Cawthorne, A. (August 20, 2007). Africa wages war on scourge of plastic bags. *Reuters*. Available at <http://www.reuters.com/articlePrint?articleId=USL2060151420070820>.

⁵ BBC News (February 23, 2005). Kenya urged to ban plastic bags. British Broadcasting Corporation. Available at <http://newsvote.bbc.co.uk/mpapps/pagetools/print/news.bbc.co.uk/2/hi/africa/4292205.stm>.

⁶ BBC News (May 9, 2003). South Africa bans plastic bags. British Broadcasting Corporation. Available at

⁷ Germain, Nicolas (April 3, 2005). Eritrea bans plastic bags. *South African Press Association/News24*. Available at http://www.news24.com/News24/Africa/News/0,,2-11-1447_1671642,00.html.

⁸ UNEP (2005). Report on Employing Economic Instruments in Solid Waste Management in Kenya. United Nations Environment Programme: New York, NY, USA.

⁹ Clapp, J. (February 11, 2008). The time has come to kill all the plastic bags. *The Globe and Mail*. Available at www.theglobeandmail.com/servlet/story/RTGAM.20080211.wcomment0211/BNSStory/International/home.



Figure 1. In African "garbage villages", petrochemical-based plastics are a major component of non-degradable pollution: Several non-governmental organizations are now training young people in recycling methods, hygiene, health care and functional literacy. © EFA Forum/Luke N. Nyaga. <http://www.unesco.org/education/wef/en-press/photo.shtm>.

banned thinner plastic bags can receive a fine of between US\$10,000- 15,000 or a ten-year jail term⁶. Reports suggest the South African approach has led to less plastic bag litter and a shift in employment away from the plastic production sector into alternative markets such as canvas bags and plastics recycling⁸.

North America and Europe have been less active in their response, potentially because their modern landfill practices and municipal waste management systems have reduced the visible extent of the problem despite high bag production and use rates. For example, in North America, San Francisco in the US and Leaf Rapids, Manitoba in Canada have banned plastic bags³. While almost 100% of the rubbish is collected and transferred to landfills in these areas, the corresponding efficiency in Africa is only about 10%¹. In addition, once collected, the waste is typically covered daily (or more frequently) in modern landfills, whereas African landfills may be rarely – if ever – covered with soil. This leads to a substantial portion of the plastic bags that succeed in being deposited in a landfill in these countries "escaping" the uncovered landfills during windstorms or because of scavenging activities by local residents or animals, only to start the pollution cycle once again. The increasing urbanization of Africa also increases the stress on its limited waste management systems which otherwise could better contain the plastic bag problem.

One of the most successful regulatory case studies comes from Ireland where economic instruments were applied. A 15-euro cent levy or surcharge was imposed on plastic bags provided by grocery stores and other shops, which reduced bag use by 90 per cent. As early as 1989, Italy had also introduced a 6-euro cent tax (about five-fold higher than the production cost) on plastic bags, making the bags more expensive than their "eco-friendly" alternatives⁸. The point-of-application of any tax measures appears to play a significant role in program success. Ireland applied their plastic bag tax at the point-of-sale, where the source and amount of the extra costs are immediately apparent to the final consumer. In contrast, Denmark applied their taxation approach to reduce plastic bag use within a larger packaging tax framework, and at the point where retailers purchase the bags from manufacturers or wholesalers. As a result, the final consumer did not clearly see the taxation strategy and additional costs with a corresponding lower bag use reduction rate (about 66% in Denmark compared to 90% in Ireland)⁸.

Voluntary initiatives have also been attempted in some regions. In Canada, most major grocery chain stores accept plastic bags for recycling⁸, and recycling initiatives are being used in Egypt and Senegal⁴. Australia has used a combination of consumer awareness, anti-litter programs, and codes of practice coupled with littering fines (ranging from US\$60 to \$4,000). One Australian retailer (IKEA) introduced a 10-cent charge in 2002 on their plastic bags, while also providing a reusable alternative. A 97 per cent reduction in

plastic bag use was reported by the company⁸. Unfortunately, there is little information available on which to assess the potential effectiveness of voluntary control measures.

Nairobi, Kenya, where each month, >24 million plastic bags are consumed², has become a case study for dealing with the African plastic bag problem. The research includes work by the United Nations Environment Programme (UNEP) in collaboration with Kenya's Institute for Public Policy Research and Analysis and the Kenyan National Environment Management Authority⁸, as well as an independent investigation by J. Njeru from the Department of Geography, University of Wisconsin-Milwaukee². Both studies found that the major stakeholders are the manufacturing and wholesale sectors which prefer a lack of regulation and have substantial governmental influence via trade associations such as the Kenya Association of Manufacturers. Conversely, the direct retailers (e.g., supermarkets) may prefer regulation in order to reduce their costs of supplying customers with free plastic bags.

The UNEP analysis suggested that Nairobi adopt an integrated policy package with the following seven instruments⁸:

- A ban on plastic shopping bags less than 30 microns in thickness.
- Consumer awareness and anti-littering campaigns.
- Promotion of voluntary schemes such as a national code of practice for retailers.
- A plastic bag levy collected from either suppliers or directly from shoppers.
- Support for development of environmentally-friendly alternative bags.
- Support for development of an effective plastic bag recycling system.
- Support for development of a managed disposal system to deal with the plastic bags that will enter the waste stream irrespective of the measures taken.

Additional UNEP recommendations acknowledged that a ban is the most effective means of reducing use and disposal of very thin plastics, given how they have a high vulnerability to littering, single-use character, low price, and poor recycling feasibility.

Njeru² subsequently critiqued various aspects of the UNEP proposal, particularly UNEP's failure to fully incorporate many of the socio-economic and political pressures behind plastic bag use and improper disposal. For example, much of Nairobi does not have a sewer system or suitable public toilet facilities. The use of plastic bags for disposing of human excreta is thus a necessity for many residents, and the UNEP proposal does not address this cause. Freely available plastic bags are also the lowest cost among the various alternatives for carrying consumer goods, which is a critical consideration for many impoverished residents. Njeru further weaves in the legacy of colonialism, which he asserts the UNEP proposal also ignores. According to Njeru², colonialism has not only resulted in the development of waste management inequalities, but its continuing "shadow" and the limited extent of solutions proposed by the UNEP proposals prevent implementation of an effective way to remedy the injustices such as via applying plastic bag taxes towards targeted waste management improvements in poorer areas of the city. In addition, much of the plastic bag industry in Kenya is owned by Kenyan-Asians who accrued their political influence under British colonial rule. It is this political influence, and associated cronyism and corruption among government officials, that Njeru asserts will greatly hinder or prevent any real progress on the plastic bag issue².

As with many other pollution issues in Africa, the plastic bag problem is rooted in widespread poverty, corruption, environmental injustice, and residues of colonialism. By tying together aspects of fundamental survival, such as acquiring drinking water and food and disposing of human waste, with high poverty rates and vested economic interests, a suite of tools will need to be applied to attempt to solve this critical environmental issue. Traditional command- and-control approaches such as bans, economic instruments that include taxes and levies, as well as consumer and producer education programs will all play their role. However, only limited success will be achieved without real political will and higher standards of living for the majority of Africa's residents.