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Think Globally, Act Locally – A Roadmap for the Efficient Management of ‘White Pollution’ in Kolkata and Chittagong

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‘White pollution’ – caused by plastic waste, such as the rampant usage of plastic carry-bags for their convenience, overlooking their impact on environmental degradation – has become a growing concern for sustainable living in both Kolkata in India and Chittagong in Bangladesh. The circulation of these single-use carry-bags is more visible in the unorganised retail market. Though controls are in place in both these cities, the problem of ‘white pollution’ is on the upswing. The long-term effective management of ‘white pollution’ demands the implementation of efficient market-based alternatives, along with the proper enforcement of a command and control policy. However, the choice of market-based alternatives lies in knowledge, ethical responsibility and integrity of the users of plastic carry-bags in the areas concerned.

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A serious threat to our sustainable living is posed by the most common mode of carrying goods in the market – the plastic carry-bags. The widespread use of plastic carry-bags is increasingly polluting the environment around the world. The convenience of using these bags, in both qualitative and quantitative terms, is accompanied by long-term negative consequences, that is, environmental degradation. ‘White pollution’ is unanimously acknowledged by the environmentalists as a serious threat.

Both in Kolkata, India, and Chittagong, Bangladesh, these light-weight bags of various thicknesses and sizes are available free of cost in the non-branded retail outlets. In the first place, commodities like meat, fish, fruits, vegetables and grocery items have no basic packaging in these markets. This, along with the non-excludable and non-rivalry nature of these bags, has encouraged the customers to maximise the use of plastic bags, while the shopkeepers tend to minimise their cost by using them. As a result, the environmental degradation, caused by the widespread use of plastic bags, causes concern. In the supermarkets, cloth bags or paper bags are offered. Alternatively, the customers pay for high-quality plastic bags. However, the habit of carrying one’s own bag to the market has not developed sufficiently among the people in both these cities. Indeed, popular concern about the long-term negative consequences of polythene use on the environment is absent.

The problem of ‘white pollution’ is an alarming concern in the two cities of the two neighbouring countries. They have been experiencing the ill effects of plastic use through the recurrent clogging of their drainage systems, leading to floods during monsoons and the problem of solid waste management, along with a diminishing aesthetic beauty of the cities. Actions have been taken in both these cities. In 2007, a ban on the manufacturing and use of plastic carry-bags of below-40 microns and of size not below 12 x 16 inches was imposed by the Government of West Bengal, India. On the other hand, the production, import, marketing, sales, display, storing, distribution, transportation and use of polythene have been completely banned in Chittagong since 2002. However, due to the lack of adequate supervision and regular inspection, the gap between enforcement of government laws and the uncontrolled use of plastic bags (white in colour, sometimes black) of various sizes and thicknesses has widened over a period of time. This has resulted in increasing levels of pollution. The potential cost of this environmental degradation is not recognised at any level, in spite of the existence of policies banning the use of specified plastic bags. The situation is more or less the same in both

these cities. Thus, the privatisation of the cost of this pollution through the implementation of effective alternative policy instruments is the need of the hour.

Various initiatives have been undertaken in different cities around the world to control plastic use. However, it is observed that its non-excludability and non-rivalry characteristics, along with the immediate and definite positive impact (Geller et.al; 2002),² is making users indifferent about their ethical responsibilities towards the environment (Manandhar 2012,³ Jayaraman et al. 2011⁴). As an example, the retailers in Malaysia did not participate in the ‘No Plastic Bag Day’ campaign when it was launched and extended for a week (Jayaraman et al. 2011) after the initial week of campaigning, with the bags still being available in the market. The lack of intrinsic motivation on the part of the customers prevents the successful implementation of regulatory instruments. Environment-friendly shopping bags used in the supermarkets are not well accepted in the retail market (Zhu 2011⁵). Hence, the initiation of sustainable policy demands a multidimensional approach in this field. This approach must consist of a strictly monitored enforcement of the law, direct participation of the users, the provision of cost-effective and convenient alternatives to plastic carry-bags, waste management policy, public awareness and education campaigns.

Behavioural Analysis

It is known that consumer behaviour is significantly influenced by the attitude towards the environment and environmental awareness (Mainbach et al. 2008⁶ and Van, Semeijn, and Keicher; 2009⁷). Environmental sustainability is usually dependent on the collective activities

² Geller, E. Scott, R. B. Bechtel, and A. Churchman. 2002. “The Challenge of Increasing Proenvironmental Behavior.” *Handbook of Environmental Psychology* 2: 525–40.

³ Manandhar, D. R. 2012. *Situation Assessment of SWM at Municipalities in Eastern Regions*. Dharan, Nepal: SEAM-Nepal.

⁴ Jayaraman, K., Hasnah Haron, Gooi Bee Sung, and Soh Keng Lin. 2011. “Consumer Reflections on the Usage of Plastic Bags to Parcel Hot Edible Items: An Empirical Study in Malaysia.” *Journal of Cleaner Production* 19 (13): 1527–35.

⁵ Zhu, Qunfang. 2011. “An Appraisal and Analysis of the Law of ‘Plastic-Bag Ban.’” *Energy Procedia* 5.

⁶ Maibach, Edward W., Connie Roser-Renouf, and Anthony Leiserowitz. 2008. “Communication and Marketing as Climate Change–Intervention Assets: A Public Health Perspective.” *American Journal of Preventive Medicine* 35 (5): 488-500.

⁷ Van Birgelen, M., J. Semeijn, and M. Keicher. 2009. “Packaging and Pro Environmental Consumption Behaviour Investigating Purchase and Disposal Decisions for Beverages.” *Environment and Behaviour* 41 (1): 125-46.

of the people, and these are greatly influenced by their sets of beliefs, values and morals rooted in national culture which ultimately determines an individual's acceptable and unacceptable behaviour (Vitell et al. 1993⁸). Therefore, an environmentally-responsible behaviour may vary significantly across cultures, and the choice of alternatives to plastic bags also varies significantly across countries.

Kolkata and Chittagong are two big cities of India and Bangladesh respectively, with similar language and cultural values. However, there are differences as well with respect to their demographic pattern, sets of beliefs, standard of living and pattern of lifestyle, among others, which could significantly influence their awareness, values and attitude towards environmental cleanliness. However, the issue of 'white pollution' and the ineffectiveness of government policy are, more or less, similar in both these cities. Neither a partial nor a blanket ban can address the 'white pollution' menace in the two cities. Hence, for the society to internalise this externality problem, a city-specific behavioural analysis of the plastic-bag users could help to gauge their sense of ethical responsibilities and integrity, and, with that, the guidelines for the specific policy need of these two cities could separately be put in place.

In Kolkata, the customer's demand is identified as the most crucial factor for the shopkeepers to offer low-quality plastic bags. However, in Chittagong, factors such as easy-to-serve and cost-effectiveness are observed as essential. As such, in both the cities, the users of plastic bags are more concerned about their usefulness instead of the quality. However, the users have strongly advocated government intervention, along with public initiatives, to internalise this externality problem. In addition, the customers have agreed to bear their collective responsibilities, that is, to carry their own bags to the shops and ultimately to prevent the degradation of the environment from the use of low-quality plastic bags. Moreover, the shopkeepers, more concerned about the profitability of their businesses, expressed their inability to participate in any preventive action. Along with the top-down approach of customers' participation, the shopkeepers in Kolkata have advocated a bottom-up approach of a strong demand to stop the manufacturing of these bags. However, in respect of 'white pollution', such knowledge and awareness of collective responsibility do not guide the users in Kolkata to fulfill their ethical responsibility. Rather, both the shopkeepers and the customers

⁸ Vitell, Scott J., Saviour L. Nwachukwu, and James H. Barnes. 1993. "The Effects of Culture on Ethical Decision-Making: An Application of Hofstede's Typology." *Journal of Business Ethics* 12 (10): 753-60.

are found unwilling to develop the habit of controlling the use of plastic. Hence, a gap between knowledge and individual action has significantly appeared that finally reflects their lack of integrity towards the privatisation of the public cost of environmental degradation.

Regulatory Measures

‘White pollution’ in the unorganised retail market will be effectively managed when the negative consequences of plastic use are better understood. For this purpose, the regulatory instruments should be formulated so as to influence the long-term stable behaviour of the users. Hence, there is an indispensable need for a policy design which can motivate the users, both extrinsically and intrinsically, to control the plastic bag use. The existence of an attitudinal gap demands the adoption of a push measure (Jakovcevic et al. 2014⁹). Therefore, the introduction of a priced but cost-effective alternative to the low-quality plastic bag can work as an extrinsic motivation policy for the residents of Kolkata. This will act as an indirect control measure for the immediate and definite positive consequence of plastic use in the unregulated retail market. However, the determination of proper economic means, and the effective and efficient alternative, is a fundamental requirement in this context.

In Kolkata, an incremental pricing policy for 40-micron plastic bags of various sizes can act as a regulatory instrument. And the burden of public cost of this externality problem can be distributed among the stakeholders. Considering the per-unit cost of bags (40 micron), the maximum burden for the customer and the shopkeepers under this policy will be ₹1.30 (S\$0.03) and ₹0.85 (S\$0.017) respectively, whereas the minimum is zero for the shopkeeper and ₹0.45 (S\$0.009) for the customers. Such measures will not only motivate the customers to bring their own bags but also strengthen their intrinsic motivation as well. Hence, a behavioural change is expected to be more durable (Steg et al. 2014¹⁰, De Groot and Steg 2009¹¹). However, strict

⁹ Jakovcevic, Adriana, Linda Steg, Nadia Mazzeo, Romina Caballero, Paul Franco, Natalia Putrino, and Jesica Favara. “Charges for plastic bags: Motivational and behavioral effects.” *Journal of Environmental Psychology* 40 (2014): 372-380.

¹⁰ Steg, Linda, Jan Willem Bolderdijk, Kees Keizer, and Goda Perlaviciute. 2014. “An Integrated Framework for Encouraging Pro-Environmental Behaviour: The Role of Values, Situational Factors And Goals.” *Journal of Environmental Psychology* 38: 104-15.

¹¹ De Groot, Judith I. M., and Linda Steg. 2009. “Morality and Prosocial Behavior: The Role of Awareness, Responsibility, and Norms in the Norm Activation Model.” *The Journal of Social Psychology* 149 (4): 425-49.

government interventions through the supervision and inspection of the availability of 40-micron plastic bags, cutting off the sources of low-quality plastic bags, and punishment are the keys to a successful implementation of this regulatory instrument in Kolkata. Here, we must not forget the fact that a levy on the use of plastic bag can be successful only in the short-run and the price must have an upward bias over time to discourage its use.

In Chittagong, the complete ban on plastic bag is a misnomer. “It is the sole responsibility of the shopkeepers to provide a bag in the market” is the strong feeling of the customers. They are least concerned about the type of bag provided to them as the bag is available free of cost. In spite of their poor educational background, the users here have accepted their individual responsibility to control the environmental degradation from plastic use. Such awareness about ethical responsibility demands appropriate policy measures to motivate the users, both intrinsically and extrinsically, towards controlling ‘white pollution’. Moreover, both the customers and shopkeepers in the unorganised retail markets in the city have agreed to use eco-friendly refundable alternatives, especially jute bags or nylon bags, or any other alternative against a deposit of money. Proceeding in this way, along with a blanket ban, a major task is to identify the cost-effective and convenient alternative and estimate the customers’ willingness to pay for that alternative. Along with a regular awareness-generation programme, a campaign for knowledge-building about the detrimental effects of unplanned plastic use on the environment can promote ethical responsibility among the people of the city. However, plastic has no alternative in the meat or fish market where the secondary packaging is essential. In this regard, the policy of a blanket ban cannot stop plastic use for this type of product. Hence, an initiative to re-evaluate the policy of a blanket ban in this market is the need of the hour.

The menace of ‘white pollution’ is a global phenomenon; not just in Kolkata and Chittagong. The adoption of policy to control its indiscriminate use must be aimed at understanding the knowledge, ethical responsibility and integrity of the users towards plastic bags in that particular province. Taking a clue from here, the policymakers in both the cities should concentrate on the users’ value positioning and a calibration of knowledge, along with implementation of effective push measures. This simultaneous positioning can only yield long-term sustainable solutions to control ‘white pollution’.

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