ETHICAL INSTRUMENTATION OF INTEGRATED WASTE MANAGEMENT

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ABSTRACT

Waste is as old as man and its culture and management change with time according to the complexity of its formation. The contemporary increase in population, industrial development and various anthropogenic activities necessitate the need for an Integrated Waste Management System (IWMS). This study reviews the technological requirement of waste management by considering the ethical significant of the entire stakeholders - the waste generators, the policy makers and the waste managers – to achieve a sustainable waste management system in the society. Thus, emphasizing that Integrated Waste Management could be realized by incorporating value-based regulations and policies, moral rearmament, and intrinsic data mining are vital instruments.

KEYWORDS

Integrated solid waste management, technology, ethics and stakeholders.

INTRODUCTION

Ethical consumerism and waste minimization strategies provide a systematic account of the moral relationship between man, natural resources and the environment at large. The internalization of moral norms as presented and exercised by various faiths are to govern human behavior towards global natural resources utilization and sustainability (Paul, 2004; New straits Times, 2009). Waste being a resource out of place gives an insight into the lifestyle of people, their progress and expose to an extent the art developed by the people. A critical inspection of leftover foods or waste reveals the dietary habits, and perhaps some insight about the diseases that can afflict or had afflicted such society (Nolberto, 2009). Waste Management as triggered by an outbreak of diseases now transcend beyond, as resources are now monitored in all phases from exploration, extraction to production and transformation during or after use. Careful analysis of waste at each stage and possible intervention, reuse, recycling and reclamation are thoroughly considered due to resource scarcity. These processes are engineered, governed and greatly influenced by man and some intrinsic factors which could be threatened by ethical emptiness. This work exposes the interactions and instrumental role of ethics in conjunction with other components to entrench an integrated waste management system.

Environmental functionalism is a manifestation of the dependant of a part on the other and this is responsible for why a problem generated in a part affect the other, hence the need to curtail waste close to its origin, control its fate to safeguard human health and sustain the environment becomes critical. Why is mankind so concerned about the production and disposal of wastes? There are economic, social, and environmental reasons for this. From an economic point of view, large amounts of money are spent on hauling and disposal of waste, these funds could be used more efficiently in other activities. Socially in developing countries, waste poses health hazard. As for domestic waste, there is a potential danger of rodents and insects feeding from it to cause the propagation of serious infectious diseases. Industrial waste can also be a critical component in the deterioration of public health when one considers acid and alkaline discharges, particulates and other pollutants that contaminate the air, soil, and water.

INSTITUTIONAL ETHICS

Analysis of the different systems and their institutional context gives insights into whether and how different institutional and technological contexts relating to waste management influence people's attitudes and behaviour.

A wide variety of economic research has already been undertaken on solid waste management, from studies on the composition of solid waste, recycling to examination of household incentives, (Huhtala, 1999; Barr et al. 2001; Tonglet et al. 2004). However, as pointed out by So¨derberg and A°berg (2002), many of these studies focus mainly on the technological and material aspects, leaving the institutional context less considered. People's behavior and attitude towards waste are greatly shaped by institutions and not only by technology and organization as stated by Refsgaard and Magnussen(2009). Meanwhile, Vatn (2005) defines institutions as ''the conventions, norms and formally sanctioned rules of a society, which provide expectations, stability and meaning essential to human existence and coordination. Institutions regularize life, support values, produce and protect interests''. Therefore, institutions do influence how we see things, what choices we make and how strongly we defend those choices. Although, motivation may spring from maximizing individual gains, but it is also influenced by (local) norms and a perception of what is a proper behaviour (Vatn, 2004). Nevertheless, the success of the chosen system within any society can be evaluated with respect to the environmental, economic and social effects (Daly and Farley, 2004). Guagnano et al. (1995) have argued that variables such as the contextual and spatial differences in waste services and provision may play important roles in establishing levels of management behaviour; they do this by interacting to alter the relationships between certain psychological variables and behaviour. As Tonglet et al. (2004) indicated, waste management is a social phenomenon in that those who engage in it are likely to be concerned with the impact of their actions on the environment and on other people. Comparative study by Refsgaard and Magnussen (2009) on two municipals revealed some key differences in behaviour and attitude towards waste management. While food waste sorting was norm-based and attitudinal due to awareness and practicalities such as the time, space and convenience, it was applicable for one municipality and not for the other. The study further indicated that the institutional context can affect people's behaviour. However, it was also found that people are loyal to their own system, which implies that the existing system affects one's attitudes and assessment.

DATA FOR DECISION

Science as a proof of concept and technology as its practical organ rely on data and figures to express it originality. Result oriented research with no consideration for the ethical implication of the data would only result to mere academic exercise and mental acrobatics. Data are collected and collated with no sense of responsibilities and used as the basis of computation, **this** become vague and the correspondent products of such data are bunches of confusion, waste of resources due to wrong modeling, simulation and projection. The reported case of significant data discrepancy between USEPA and BioCycle (Kaufman et al., 2004; Glenn and Riggle, 1989) is a typical case study. In 2006, the BioCycle reported a much higher total of 413 million tons of MSW exceeding FAL's 251 million tons by over 60% (Arsova et al., 2008; USEPA, 2007). Similar data contrariety in the two sources perpetuated for other years (Themelis and Kaufman, 2004; Simmons et al., 2006a,b). These are indications of data inconsistency and the tendency of political, economical or professional ethical compromise along the chain of its generation.

The resultant implication of these and other imbalances are inadequate provision for effective instrumentation, management and policies. The plain manifestation of ethical void harvested by most developing countries is that these questionable data which are often generated abroad are depended on to design equipments and tools which find less to no fitness in the developing countries due to their peculiarities, so these equipments and tools add to the volume of waste in a short while. Unfortunately, the political and expertise shallowness in the regions were unethically explored by manufacturers, foreign agencies and consulting firms for egoism. The UNDP report on Penang Integrated waste Management Pilot Scheme(UNDP, 2008) indicated that the operational lifespan of imported compactors are shorter in Malaysia compared to the country that produced them and this is traceable to the weight and nature of the waste generated in Penang; a replicate of most tropical regions across the developing world. These ethical voids across the chain of stakeholders account for the repeated occurrence of such. Thus, wasting resources due to the untimely breakdown of these vehicles and other equipments, then a sizeable volume of steel are set out of place.

PLANNED OBSOLESCENCE AND ETHICAL RESPONSIBILITIES

Planned obsolescence is to stimulate replacement buying by consumers. The most direct way to speed replacement demand is to shorten the usable life of a product through one or more physical mechanisms such as Limited functional life design (''death dating'') (Slade, 2006); Design for limited repair(Adolphson, 2004 and McCollough, 2007) and Design aesthetics that lead to reduced satisfaction (Cooper, 2005). Obsolescence can as well be designed to foster Technological Obsolescence 'voluntary' as represented by Packard, (1960). This includes: Design for fashion (Slade, 2006) and Design for functional enhancement through adding or upgrading product features (Saunders and Jobber,1994).

Today, the mounting numbers of functioning durable goods ending up in landfills have led to renewed criticism of product obsolescence. Sources indicate that in North America over 100 million cell phones and 300 million personal computers are discarded each year, and only 20,000 televisions are refurbished each year while 20 million are sold, resulting in tremendous environmental damage from lead, mercury, and toxic glass aside the volume of waste generated (Boland, 2001; Slade, 2006). Additionally, when electronics are recycled, 50%–80% are shipped to third world nations (especially in Africa and Asia) where workers use dangerous, primitive processes for extracting recyclable materials, thereby exposing themselves to toxic gases in the process (Associated Press, 2007) while the bulk of it ends up in the dumpsite.

There are several drivers of obsolescence and fast replacement, such as scenario where durable goods producers face a specific challenge in maintaining a high rate of sales growth. This ''durables problem'' – the core driving force behind planned obsolescence in any market structure (from monopoly to intensive competition) – occurs when successful sellers quickly saturate their markets. The more reliable and long-lasting a product, the longer the repeat purchase cycle and the slower the rate of sales growth. Thus, increasing the rate of replacement through obsolescence will enable firms to: (1) stimulate revenues through faster replacement; (2) reduce competition from any used good markets; (3) make used or owned goods less competitive, increase prices for the replacement product (Joseph, 2008).
This situation is worsen by the unethical consumeristic nature of consumers who are also crazy of new products to prove being fashionable irrespective of the worth and its environmental consequences, forgetting that, while innovation and technological progress are good (ceteris paribus), the gains from some new products may not worth the consumers or environmental cost.

LAWS, REGULATIONS, POLICIES EFFECTS ON WASTE

Until recently, policing the environment relied on a traditional command and control regulatory structure where laws are enforced and amended to suite changing situations. According to traditional enforcement, the state determines the rules and regulations and establishes punishment for administrative, civil, and criminal violations. However, the shift in environmental policy away from traditional enforcement toward ethical market-based approaches as expressed in the 1990s by the "US Audit Policy" on "Incentives for Self-Policing: Discovery, Disclosure, Correction, and Prevention of Violations" (U.S. EPA, 1995, 2000) changed the nature of environmental regulation drastically (Kraft and Vig, 2000; Short and Toffel, 2007). Data are essential for solid waste regulations, management and planning at all levels of government. Thus, government benefits from using dependable data for establishing guidelines and standards, passing laws and adopting regulations for state and local governments' enforcement on industries and cooperation. Hence, a "materialistic and self-centered mode of collective existence" of regulators, environmentalists, engineers and politicians couple with their "arrogant chauvinism" does influence regulations and policies as represented in the spirit of thought by Michael Fox in his global bioethics (Michael, 2001). This ego accounts for our biosphere becoming dysfunction which in turn leads to human and environmental harm. Fox then suggest that "the global bioethics thus requires an absolute ethic of reverential respect for life" from the stakeholders. Fox opposes the ethical perspective to "situational ethics," by which he seems to mean a relativistic ethics that would imply that violence towards a kind of waste and its nature is warranted in some circumstances but not in others as expressed in the case of waste and pollution compounding in most environmental Act law. In view of this, ethics arises out of instincts of self-preservation and empathy, and arriving at a justified ethical framework which involves combining reason and emotion.

Moreover, in waste management policy it is important to analyze how people act and discuss in different situations and settings so as to find a system which is both organizationally and technically appropriate. Only by doing this can we hope to secure the moral acceptance of people, and hence their willingness to adapt to such policy. If information is adequate and the right institutional team is chosen, then behaviour can be improved over time with regard to waste management efforts (Refsgaard and Magnussen, 2009). For instance the "Audit policy" of the U.S. Environmental Protection Agency's Self-Policing Policy waives or reduces penalties whereby companies voluntarily discover, disclose, and correct environmental violations. The role of laws and regulations in instituting a proper waste management system cannot be under estimated as policies are related to waste prevention, minimization and source reduction as well as compliance and self- policing.

CONCLUSIONS

Management of waste should not be limited to its normal collection, recycling, reuse, incineration and disposition or landfilling for it to be an integrated strategy. It should incorporate ethical consumerism, green manufacturing, sustainability, policies and regulations and consideration for a safe environment as a panacea to waste

minimization, waste reduction and reuse, zero waste system engineered by the mindset of people as regards their needs and wants ad mist the consumeristic life style of today.

Professionalism should be exercised with full ethical sense of balance between the anthropocentrism and non-antropocentrism. The environmental footprint and its health effect should be prime instead of an absolute preference given to profit out of every investment. Data acquisition and utilization should be localized and standardized to ensure precision and thereafter reduce undue waste generated due to equipments and tools. Likewise, there is the need to appeal to people sense of moral through religions, social and relevant institutions to establish a cordial relationship between needs, waste and the environment.

Finally, the cost of treating and managing waste can be drastically reduced if incentives such as "tax free or holiday" are staged for industries that are waste conscious. Collaborative research fund could be instituted to ensure integration and close loop waste utilization between industries. As the custodians of the Earth, man has the moral obligation to take care of it by subjecting its science to morality.

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