

A New Classification and An Extension of Waste from Business Practices and Islamic Perspective

Abu Saim Md Shahabuddin*
Mohd Edil Abd. Sukor**
ABM Helal Uddin***

Abstract: Taking the idea of waste as an in-use phenomenon, we developed a matrix to explain four categories of waste which result from users' failure to use a resource properly. These categories were illustrated by examples built on practical food waste measurements, surveys, theses formatting requirements and newspaper reports. We have categorized different facets of waste from a business perspective; thus, contributed to have improved waste management practices. We also showed that parsimony was also a wasteful behaviour. Parsimony was shown to be a waste by its effects on others' need of fulfilment and other-worldly consequences for the miser.

Keywords: Wasteful Behaviour, Socio-individual Context, Business Practice, Islamic Perspective

Abstrak: Mengambil kira idea mengenai pembaziran sebagai satu fenomena biasa, kami membina satu matriks bagi menjelaskan empat kategori berlakunya pembaziran yang disebabkan oleh kegagalan pengguna dalam menggunakan

*Professor and Chairman, Department of Business Administration, School of Business, Uttara University, Bangladesh. Email: asmshihab@gmail.com

**Corresponding author. Visiting Fellow, the Oxford Centre for Islamic Studies, United Kingdom and Senior Lecturer, the Faculty of Business and Accountancy, University of Malaya, Kuala Lumpur, Malaysia. Email: mohammad.abd-sukor@oxcis.ac.uk

***Associate Professor, Kulliyyah of Pharmacy, International Islamic University Malaysia. E-mail: abmhelal@iium.edu.my

sumber dengan betul. Kategori ini digambarkan melalui beberapa contoh berdasarkan ukuran sisa makanan yang praktikal, kaji selidik, keperluan pemformatan tesis dan laporan akhbar. Kami juga mengkategorikan kepelbagaian aspek pembaziran menurut perspektif perniagaan, dengan itu ia dapat menyumbang kepada penambahbaikan dalam amalan pengurusan pembaziran. Kami turut memperlihatkan bahawa kekikiran juga adalah satu tingkah laku pembaziran. Ini kerana telah terbukti bahawa kekikiran adalah satu pembaziran berdasarkan kesan-kesannya terhadap keperluan orang lain dan juga kehidupan selepas mati ke atas orang yang kikir itu.

Kata kunci: Kelakuan yang Sukar, Konteks sosio-individu, Amalan Perniagaan, Perspektif Islam

Introduction

Waste is a common issue in the South and the North, in the East and the West. It is multifarious and the problem it poses is multidimensional. Effective handling of this problem requires understanding of waste from as many diverse perspectives as possible.

The existing classifications of waste into various categories have considered different facets of it and deepened our understanding of waste; thus, contributed towards improving waste management practices. As the current classifications invariably consider waste as a post-use phenomenon, their focus is logically on waste and waste management; agencies or users or behaviors that generate waste are not their primary focus. Waste as a post-use phenomenon can be inevitable, unavoidable, and even desirable. In this article, firstly, we propose a new classification of waste considering it as an in-use phenomenon where waste is avoidable and necessarily undesirable. Locus of this classification is individual behavior. In other words, waste is seen here from the perspective of usage of resource in a socio-individual context in which the individual wasteful behaviors take place. The context has been characterized by the economic idea of affluence and hardship of society and the individual. Secondly, the article attempts to widen the idea of waste by considering parsimonious behavior as a wasteful behavior too. It means that non-use of resource when its use is urgent or desirable is tantamount to waste. This widening attempt has been grounded in the notion of ownership and use of resources from an Islamic perspective.

To achieve the above indicated twin purposes, the following discussion is organized into three main sections. A brief review of the current definitions and classifications of waste is presented first. In the next section, the user-focused classification of waste is proposed and categories of waste are illustrated with examples. The subsequent section delves into extending the concept of waste by arguing that withholding resources from being used for good causes is nothing less than waste. A conceptual categorization of such withholding behaviors is also presented in the section. In the conclusion, implications of the proposed classification and extended concept of waste are highlighted.

1. Literature Review

1.1 Waste Definitions

The word waste commonly refers to a thing that has no further use. It can be output of some process or conversion of resources after the intended use. According to a general dictionary, waste as a noun, is “an unnecessary or wrong use of money, substances, time, energy, abilities, etc.”; and as a verb, it is “to use too much of something or use something badly when there is a limited amount of it” (Woodford & Jackson, 2003). Resonating the meaning of waste as using something badly, Ohno (1988) describes waste as “any human activity that absorbs resources but creates no value”. Waste has been defined by various authorities mostly from the perspective of waste management. The Table 1 below shows some of the official definitions of waste as found in Wikipedia.

Table 1 Authoritative definitions of waste

Defining Authorities	Definitions
United Nations Environment Programme (UNEP 1989)	“Substances or objects which are <u>disposed</u> of or are intended to be <u>disposed</u> of or are required to be <u>disposed</u> of by the provisions of national law.”

United Nations Statistics Division (UNSD)	“Wastes are materials that are not prime products (that is products produced for the market) for which the generator has <u>no further use</u> in terms of his/her own purposes of production, transformation or consumption, and of which he/she wants to <u>dispose</u> . Wastes may be generated during the extraction of raw materials, the processing of raw materials into intermediate and final products, the consumption of final products, and other human activities. Residuals recycled or reused at the place of generation are excluded.”
Waste Framework Directive (European Union)	“An object the holder <u>discards</u> , intends to <u>discard</u> or is required to <u>discard</u> . Once a substance or object has become waste, it will remain waste until it has been fully recovered and no longer poses a potential threat to the environment or to human health.”
The UK’s Environmental Protection Act (1990)	“Waste includes any substance which constitutes a scrap material, an effluent or other unwanted surplus arising from the application of any process or any substance or article which requires to be <u>disposed</u> of which has been broken, worn out, contaminated or otherwise spoiled; this is supplemented with anything which is discarded otherwise dealt with as if it were waste shall be presumed to be waste unless the contrary is proved.”
Waste Management Licensing Regulations (1994)	“Any substance or object which the producer or the person in possession of it, <u>discards</u> or intends or is required to <u>discard</u> but with exception of anything excluded from the scope of the Waste Directive.”

Note: Emphasis added by underlining certain words of the definitions.

The underlined words in the Table 1 above indicate the common theme of various definitions of waste. They imply that waste is something that is to be disposed or discarded. After summarizing some current definitions of waste, Pongracz (2002) made an important observation. She noted, “What appears to be common in the definitions ... is that waste is something that its holder has disposed of, or discarded.” This observation clearly indicates that in the current definitions, waste is

a post-use phenomenon and the focus is on the object—something disposed or discarded. We can easily notice the reflection of this object-focused post-use notion of waste in its current classifications.

1.2 Classifications of Waste

There are ways to classify waste. One way is to classify waste according to the type of waste material. Under this classification, we see waste types like organic and inorganic waste, biodegradable and non-biodegradable waste, hazardous (special) and non-hazardous waste. Classifying a waste material as hazardous or non-hazardous is done based on its potential threat to humans and the environment. Most of the chemical wastes are considered under the category of hazardous waste. Biological waste also come under the hazardous category and requires proper handling and disposal. Sharp waste such as empty glass ampoule, medicine container, disposable syringe, biological sample collection specimen containers are considered as hazardous waste as well (New South Wales Office of Environment & Heritage (OEH), 2008).

Waste is also classified by the socio-economic sector generating the waste. Household waste, industrial waste, commercial waste, institutional (like hospitals, schools, government offices) waste and the like are categories based on the sources of waste. All these waste categories can be placed under two-fold classification: controlled waste and non-controlled waste. Source-wise waste can be further classified by type of waste material. For example, household or domestic waste can be categorized based on their biological degradation ability. Food and human waste are considered biodegradable and matters like plastic and metals are considered as non-biodegradable waste. Similarly, a particular source-specific waste can be further classified into subcategories by waste type. A biomedical waste, for example, describes ten categories viz. Human Anatomical Waste; Animal Waste; Microbiology & Biotechnology Waste; Waste Sharps; Discarded Medicines and Cytotoxic Drugs; Solid Waste; Liquid Waste; Incineration Ash and Chemical Waste (Katoch, 2007).

Country-specific waste classification systems also go in line with object-focused post-use notion of waste. Waste classification system for South Africa in its schedule for regulation divides waste into general and hazardous waste. The general category covers domestic waste, building and demolition waste, inert waste and waste tires. The hazardous

category covers health care risk waste, waste electrical and electronic equipment, waste batteries, and asbestos waste (Crous, 2010). The UK waste classification system in its annex 2 (Codes for the Classification of Waste Composition) states 13 first level categories of waste composition. Included among these categories are inert, contaminated general, healthcare risk wastes, radioactive, and explosives (DETR & EA, 1998).

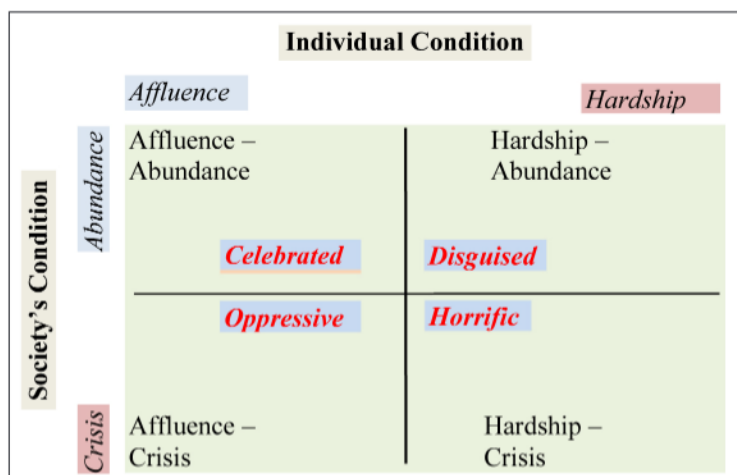
With the development of the science and technology, new types of waste are added up to the existing waste categories. Especially because of the development of electrical and electronics sector, the out of order electrical and electronic units have become a waste of special category. Even at manufacturing point, rejected items contribute to this category. In this special waste category of rejects or unusable products, the best examples could be spoiled computers, hand phones, home appliances, and instrumental units.

Our objective here is not to reproduce the available waste classification systems. We rather referred to some of them to make the point clear that the current definitions and classifications of waste treat waste as an object which was once a resource or part of a resource and has now been left as unusable by the user or the possessor who had discarded or disposed it.

2. Data and Methodology

Waste is generally considered to be a phenomenon in the life of affluent people. This is presumably because wasteful behavior of the affluent is usually conspicuous by its scale. Waste, which is generated through users' failure to use resources for the intended purpose, signifies all sorts of misuse, abuse or excessive use of a thing. Such a use cannot be limited to the behavior of affluent only. The waster may waste in his state of affluence or state of hardship, only the scale of waste varies. Similarly, a wasteful behavior may manifest in a society which either enjoys fortune or suffers crisis. Putting these individual and social conditions together, the matrix in the Figure 1 below shows four circumstances in which wasteful behavior occurs. The terms used to signify waste in these circumstances are celebrated waste, oppressive waste, disguised waste and horrific waste. These types of waste are explained and illustrated with examples below.

Figure 1 Typology of waste in different economic context of spending or usage of resource



These four categories of waste were measured by examples built on practical food waste measurement, survey on 91 respondents, theses formatting requirements and newspaper report.

3. Empirical Results

This study identifies and discusses four categories of waste. Horrific waste meant an impoverished waste amidst of social state of crisis; food waste illustrated it. The waste by an affluent in a social state of abundance was termed celebrated waste; paper waste illustrated it. Electricity waste illustrated oppressive waste which meant waste by an affluent in an impoverished society. Disguised waste meant an impoverished waste in an affluent society; phone waste illustrated this category. As for the second objective, like extravagance, parsimony was shown to be a waste by its effects on others' need fulfilment and other-worldly consequences for the miser.

Sustainable development has been conceptualized as a development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987). The main thrust of sustainable development is thus to leave the coming generations a better world. Clearly, ‘waste not’ is an indispensable key to attaining the goal of sustainable development. Waste elimination or waste minimization requires, among others, discouraging and denouncing

wasteful behavior. Although waste management is mainly concerned with disposing or discarding things, one of the three options for the minimization of things to be disposed of is preventing and/or reducing the generation of waste at the source (Pongracz and Pohjola, 2004). For this option of waste minimization to be fully utilized, a user-focused, not the object-focused, definition of waste was needed. Definitions of waste proposed by Pongracz and Pohjola (2004) have met this need as they defined their fourth category of waste as “things with well-defined purpose, and acceptable performance, but their users failed to use them for the intended purpose.” This concept of waste offers us the clear opportunity to see waste as an in-use phenomenon which is considered undesirable and avoidable. This contrasts with the predominant idea of waste where waste is seen as a post-use phenomenon which can be inevitable, unavoidable and even desirable in some cases. Our proposed classification of waste is based on the user-focused definition of waste.

3.1 *Horrific Waste*

Horrific waste is a waste that occurs in a state when society undergoes a crisis and the individual responsible for the occurrence of the waste is subject to hardship meaning that he cannot afford to indulge in lavish spending. This waste is illustrated here by a practical assessment of food waste collected from two restaurants.

Food waste is rampant. Statistics speak of it. In 1997, about 25% of all food produced for human consumption in USA went waste. This waste in dollar value was 31 billion. More importantly, 49 million people could survive on it for one year (Kantor, Lipton, Manchester & Oliveira, 1997). When man, recently equipped with genetic technology, strives for increasing food productivity, food waste chases him. In less than a decade, by the year 2004, food waste in USA has been much more than double. “Americans are tossing out at least \$75 billion in food each year” (O’Hanlon, 2004). Food waste in UK is also staggering. Her annual food waste is 6.7 million tones, which worth £8 billion (James, 2008). Prediction about urban food waste is alarming. On a global scale, urban food waste would increase by 44% from 2005 to 2025 (Adhikari, Barrington & Martinez, 2006).

Now, the relevant question for our current purpose is does the food waste occur in a general food crisis? In 2008, the world was struck by food crisis. Prices of food grains had skyrocketed in the year throughout

the world. The staple food grain in Malaysia is rice. Its price was increased by 60% or more. Thus, people in Malaysia at large were experiencing food crisis. During this time, we collected waste to see if consumers waste rice in the on-going crisis. With full consent and the assistance of restaurant owners, proper arrangement was made to collect leftover from a public restaurant and a university cafeteria. Table 2 shows details about the left-over assessment.

Table 2 Waste of rice at dining tables at restaurants

Information item	Setting 1	Setting 2
Date	21 August 2008	22 August 2008
Meal time	Dinner (6 PM to 2 AM)	Lunch (11 AM to 2 PM)
Restaurant	Privately owned, small	Cafeteria for residential students at a university
Consumers	Middle and lower middle class	Undergrad and postgraduate students (male)
Collected leftover: ¹		
Total:	9.0kg	21.1kg
(Boiled) rice:	4.9kg	5.6kg
Others:	4.1kg	15.5kg ²
Total amount of rice boiled for the meal	12 kg	14 kg
Amount of rice consumed by eating-in consumers ³	6 kg (approx. 50% of the total)	7 kg (approx. 50% of the total)
Calculation of waste (rice) ⁴	$(4.9 \div 3) \div 6 = 27.22\%$	$(5.6 \div 3) \div 7 = 26.67\%$

¹ Special container was provided and owner/manager of the restaurant was requested to make sure that 'eating-in leftover' were properly collected from tables and placed in the container.

² Includes vegetable 7.4kg, meat and fish 4.6kg and non-food items 3.5kg.

³ Owner and manager of the restaurants were contacted to obtain this approximation.

⁴ 1kg rice = 3kg boiled rice. 250 gram rice (similar to the one cooked in the restaurants) was boiled to determine this ratio.

Waste of rice is obvious in the table. Both student and non-student consumers wasted over one-fourth (27%) of the served rice. Two points need to be underscored. Firstly, this waste occurred in a state of general crisis of food items, not in abundance. Secondly, the agents of this wasteful act were not affluent, if not poor. Consumers of the public restaurant (Setting 1) were middle and lower middle income people. Location, size, layout, price and overall appearance of the restaurant clearly indicated that its services were not meant for affluent and elites. As for the university cafeteria (Setting 2), its consumers were students who mostly used funds provided by parents or government or foundation. Most of them did not use their own money and were having a moderate living. In consideration of these, the food waste of in this particular case is considered an example of the type of horrific waste.

3.2 *Disguised Waste*

Disguised waste results from wasteful behavior by non-affluent people in a social state of abundance which tends to mask the waste. Buying, using, maintenance and disposal are four major stages in consumption behavior. Waste can occur at any stage involving a particular product. Our survey on students' cell-phone illustrates the disguised waste which occurred due to early disposal of usable products. We surveyed undergrad students of a Malaysian public university to know how frequently they change their cell-phones. Ninety one (91) students took part in the survey. The following Table 3 shows average period of use of a cell-phone set by them.

Table 3 Average period of use of a cell-phone set

Average length of use	Number of students	%	Cumulative %
Less than one years	7	7.7	7.7
One year	17	18.7	26.4
1 + to < 2 years	35	38.5	64.8
2 years	21	23.1	87.9
2 + to < 3 years	2	2.2	90.1
3 to 4 years	3	3.3	93.4
5 years	3	3.3	96.7
6 years	3	3.3	100.0
Total	91	100.0	

Note: Two statements that generated data necessary for the calculation of average usage period were: (a) I have been using cell-phone since ____ (e.g., 1999, 2001....); (b) The one I currently use is the ____ (e.g., 1st/2nd/3rd/4th) cell-phone in my life.

Nearly 90% of the students discard their existing set for a new one in two years or less, and over one-fourth of them change in one year or less. Only a minority of them (10%) get a new phone set after three years or more. The frequent change implies waste. When a lifetime of a good cell-phone is 4-5 years (What is the average lifetime of a cell-phone?, 2008), discarding it before that is a waste. Moreover, discarding a phone even after the stipulated lifetime may be a wasteful disposal if the phone remains usable. If discarded phones do not get into a proper recycling system, they pose threat to environment as their formative ingredients (e.g. metals, plastics, and chemicals) are potentially harmful to it. Virtually, no phones are recycled. Statistics show that only less than 1% of the discarded phones were recycled between 1999 and 2003 (The life cycle of a cell-phone, 2004).

Of course, not all changes of phone sets are a wasteful disposal since genuine necessity can arise. The students were asked to list down reasons why people of their age (e.g. their friends) change their phones. From the perspective of a prudent use of resources, many of the reported reasons for buying a new phone (Table 4 below) can be seen as clear indications of wasteful disposal of resources. By family income level, vast majority of the surveyed students were from middle or lower-middle income families. Their early disposal of cell-phone occurred in a society which shows abundance in phones and related technological products. Thus, the waste in this case is considered a representation of disguised waste.

Table 4 Reasons for buying a new phone

Reasons	Frequency	%
New technology, function and design	56	61.54
Fashion	51	56.04
Broken/lost	25	27.47
Extra money	18	19.78
Influenced by friend/advertisement	17	18.68
Show off	13	14.29
Seeking more satisfaction	8	8.79
Hobby	4	4.40
Others (Gift, boring, multi-sim cards, etc.)	8	8.79

3.3 *Celebrated Waste*

Celebrated waste occurs in a state of abundance in society where the person or the agency responsible for the waste is also affluent. Paper waste, which can be attributed to theses/dissertations printing requirements at some universities in Malaysia, illustrates this waste.

Contrary to the anticipation of paperless world, remarkable development in ICTs and increasing use of computers all over the world could not make the demand of paper decline; rather the demand is on the rise. Peters (2003) reported that the use of printing and writing paper grew by more than 10% from 1980 to 2003. Per head global paper consumption in the year 2004 was 52.45kg. This amount was 16.32% higher than that in 1991. In the face of growing scarcity of conventional raw materials for paper, efforts are already underway to reduce dependency on wood pulp— global production of which was 170 358 000 tons in 2003 (Rodriguez, Serrano, Moral, Perez, & Jimenez, 2008). Against the backdrop of this scarcity and consequential efforts, prudent use of paper is a must. Use of paper by universities is prodigious. A simple calculation below shows how official printing requirements can result in incredibly large volume of paper waste.

One major use of paper at a university is production of theses or dissertations. Thesis manual of a university specifies requirements according to which theses are printed for final binding. Table 5 shows three general requirements of a thesis manual of a Malaysian university.

Table 5 General requirements of a thesis manual of a university in Malaysia

Parameters	Requirements
Font Size	For the basic text, the 12-point size is to be used.
Line Spacing	The line spacing of the basic text should be set at 2.0 (double spacing) .
Printing	Printing should be single sided (right hand side of an open manuscript)

Books are printed double-sided, single spaced, with 10-point font or even smaller. Books are readable. A complete thesis—which sits on the shelf of a library—is also readable if printed in the same manner. Following this, a desirable set of requirements will be: 10-point font size, single-spacing and double-sided printing. Applying this desirable set of requirements, a 36-page word document was changed in order to

uncover the waste hidden in the current requirements as shown in the Table 6.

Table 6 Reduction of volume of a document (size: 36 pages) under desired requirements

Parameters	Requirements		Size (pages) of the document after successive changes		Vol. of reduction (compared to the original)
	Current	Desirable			
Font	12-point	10-point	10-point of 36pp.	27pp.	9 pages (25%)
Line Spacing	Double	Single	Single spacing of 27pp.	17pp.	19 pages (52.78%)
Printing	Single-sided	Double-sided	Double sided of 17pp.	9pp.	27 pages (75%)

Table 6 shows that the file was reduced by nine (9) pages when 10-font size was applied. It was further reduced by 10 pages when double-spacing was changed to single-spacing. These two desirable requirements made the 36-page document 17 pages achieving 52.78% reduction of the original. Evidently, the document would be only nine (9) pages when printed double-sided. This meant the document would finally shrink to one-fourth of its original volume when it followed some desirable changes. This dramatic reduction implies a potential saving of 75% of the paper currently used for thesis printing. It is important to note that this costless change can save not only paper; it can save costs in respect of printing and binding, shelf space of the library, and physical relocation and future reproduction of theses.

In consideration of the magnitude of this waste and the socio-economic status of those responsible for formulating and implementing institutional policies and requirements, the paper waste in this case can be considered a representative of celebrated waste.

3.4 *Oppressive Waste*

The term oppressive waste is used here to denote waste that results from wasteful behavior by an affluent person when general mass in the society experience a crisis. Waste of this kind is prevalent in poorer countries where mass populations have difficulties to manage the basic necessities for life, but tiny affluent section squanders resources showing sheer neglect to the destitute folks. Food waste by affluent in a condition of mass starvation is an example of oppressive waste. To illustrate this waste further, we present a brief reflection on waste in

electricity consumption, which is inseparably tied to the characteristic features of the contemporary urban civilization.

In the year 2000, fossil fuels (coal, oil, natural gas) were used for 71% of the electricity produced in USA and 64% of the same produced globally. Fossil fuels are considered non-renewable energy sources as their current depletion rate is faster than nature could ever replace (Nemzer, Page and Carter, 2005). Increasing global use of them increases the possibility of their running out with each passing year. Along with running out risk, unhappy exposures to their soaring prices and increasing concern for environmental health have urged for greater use of other energy sources (e.g. solar, wind, geothermal, nuclear, and hydroelectric) in electricity production (Jobe, 2006). The concern over electricity generation should be accompanied by prudent consumption of electricity. The current reality, however, goes against such consumption.

Lighting homes to impress people is a reason for electricity waste. New Straits Times' special issue on sustainable consumption (2008, July 26: 8) published a poster showing a palace-like house aglow with excessive lights and a book being read under dim candlelight. The legend under the house was "Our Problem" and the legend below the book was "Their Problem". The paragraph that follows depicts this reality and is and worth-quoting here.

We've all heard it more than once – "Save energy, conserve electricity". Sadly to many of us these remain words, to be practised by others. Then there are those of us who repeatedly remind our children to switch off the lights, yet didn't think twice about buying that wonderfully large chandelier to impress the neighbours. 2 billion people on our planet still have no access to electricity. How can our children appreciate energy, or the plight of children reading by candlelight, when we light up our houses ten times too bright? Sustainable Consumption is more than a catchphrase; it is about consuming differently and efficiently. Think about it, twice.

When 2 billion people do not have access to electricity, waste of it by affluent section of a society in any form can be qualified by the term oppressive waste. With a modification, the above mentioned two legends can be read as "*Our enjoyment, their problem*". This modified reading expresses the nature of oppressive waste in a direct and forceful manner.

3.5 *Extending the Concept of Waste*

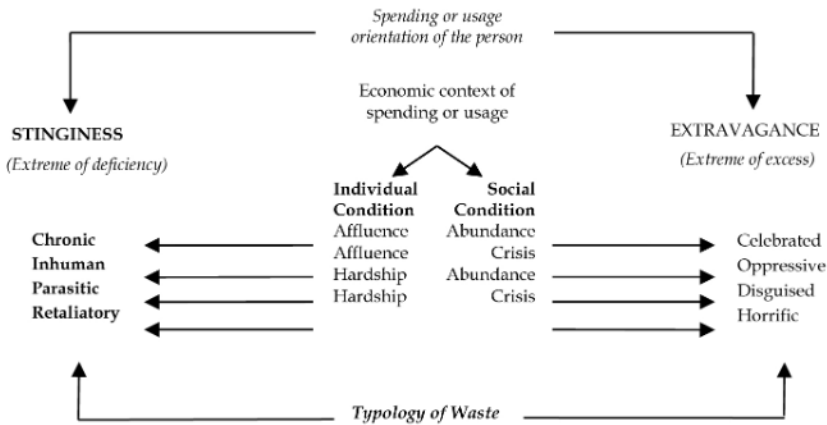
Seen from Islamic perspective, men are not the real owners of what they possess. Al-Quran informs us that all things in the heavens and on the earth belong to Allah (al-Baqarah 2:284). Allah, the absolute Owner of all things, gives to whom He wills without limit (al-Baqarah 2:212) and it is He Who decreases or increases our provisions (al-Baqarah 2:245). Men are trustees as what they possess are given by Him. As trustees, men are to spend or use the given provisions in accordance with His guidelines. The Quranic guidelines instruct us that we should spend “that which is beyond our needs” (al-Baqarah 2:219) and whatever we spend of good “must be for parents and kindred and orphans and the poor who beg and the wayfarers” (al-Baqarah 2:215). Resources must be used for the good cause—this is an essence of the numerous Quranic guidelines for spending.

Men are instructed to *avoid extravagance*. “And give to kindred his due and to the *miskin* (poor who beg) and to the wayfarer. But spend not wastefully (your wealth) in the manner of a spendthrift” (al-Isra’ 17:26). “And eat and drink but waste not by extravagance, certainly He (Allah) loves not the extravagant people” (al-Araf 7:31). Men are also instructed to *shun miserliness*. “And spend in the cause of Allah and do not throw yourselves into destruction (by not spending your wealth in the cause of Allah) and do good” (al-Baqarah 2:195). “Verily Allah does not love arrogant, the vainglorious, (nor) those who are miserly and enjoin miserliness on others and hide what Allah has bestowed upon them of His bounties.” (al-Nisa 4: 36-37). Denouncing both extravagance and miserliness, Allah admonishes us: “And let not your hand be tied (like a miser) to your neck, not stretch it forth to its utmost reach (like a spendthrift), so that you become blameworthy and destitute” (al-Isra’ 17: 29). Thus, the proper and prudent spending would follow a middle course avoiding the extremes of extravagance and miserliness. Al-Quran informs us that the true slaves of Allah are those “who, when they spend, are neither extravagant nor niggardly, but hold a medium (way) between those (extremes)” (al-Furqan 25:63, 67).

In both ancient Greek and Muslim philosophical ethics, a virtue is considered as a mean (dubbed as golden mean) between extremes which are vices. Hence, deviations from the mean towards the extreme of excess and the extreme of deficiency are vices (e.g. Aristotle, d.322

BC; Tusi, d.1274 CE; Miskawayh, d.1030 CE). Applying this notion of virtue as a golden mean, it can be said that the prudent use of resource is a virtue and deviation from such use can occur in the direction of *excess* as well as in the direction of *deficiency*. In the direction of excess, *extravagance* causes waste through overuse, or unnecessary use, or wrong use of resources. The user or person responsible for such use is blameworthy because his spending behavior or usage is unrestrained and it bends towards the extreme of excess. The discussion on waste in the preceding section has taken waste as a phenomenon deviated from the proper and prudent use of resource in the direction of excess. In our proposed classification, celebrated waste, oppressive waste, disguised waste, and horrific waste have been identified as types of waste that occur through extravagance, i.e. wasteful behavior in the extreme of excess (see Figure 2).

Figure 2 Extending the concept of waste in the direction of stinginess



The regular and common meaning of waste does not capture the deviation from proper and prudent use of resources that occurs in the direction of *deficiency*. In this direction, stinginess causes waste through under-use or non-use of resources. The person here displays small, mean and calculating attitude towards life and withholds resources from due use, and hence is liable for waste. To emphasize, waste by stinginess is a waste of resources which have not been put to use, and so no benefit is generated. Slander, backbiting and stinginess these three vices are severely condemned in the Quran (al-Humazah 104:1-3). About stinginess, Yusuf Ali (1992:1698) notes that the miser “piles up wealth

not for use and services to those who need it, but in miserly hoards, as if such hoards can prolong the miser's life or give him immortality; miserliness in itself is a kind of scandal."

Extravagance, a deviation from the proper and prudent use of resource, is clearly acknowledged as a wasteful behavior. *Why should miserliness, a deviation from the same in the direction of deficit, be considered as wasteful behavior like extravagance?* Here we venture to argue that, although the forms of the two deviations are different, their (a) effect on others and (b) the ultimate consequence for the deviant person are the same. We elaborate this argument in the following paragraphs.

Effect on Others: As for the effect, the underlying fact common to both extravagance and miserliness is that the *need fulfilment* of others is compromised or neglected. A profound reflection on the nature of waste can reveal that both the affluent and the impoverished waste other's resource, not their own. This is because waste, by its regular definition, is unnecessary or excessive use of something. It occurs beyond the level of one's normal need of satisfaction. *Anything that is left after one's normal need fulfilment is others.* Therefore, what is wasted is only placed at the disposal of the waster for the benefit of other; it does not actually belong to him; it belongs to others. 'Other' includes contemporaries and members of the coming generation. The waster then not only violates rights of others at his own time, his extravagant use of resource seriously impinges on the ability of need fulfilment of future generations and hence puts their interests at stake. The same observation applies to a miser who hoards and piles up resources denying the needs of others, sometimes even of his own.

Consequence for the Deviant: The ultimate and eternal consequences of deviations from proper use of resource are the same for the extravagant and the miser. Allah loves neither the extravagant (al-Araf 7:31) nor the miserly (al-Nisa 4:36-37). A miser is destined to be doomed (al-Humazah 104:1-3). Miser's destruction is also mentioned in a Prophetic narration. "Everyday two angels come down from heaven and one of them says, "O Allah! Compensate every person who spends in Your cause; and the other says, "O Allah! Destroy every miser" (al-Bukhari, d.870 CE, Vol.2, Hadith No. 522). Extravagant people are also destroyed since they are compared to devils and the Devil is ungrateful

to his Lord (al-Isra' 17: 27). They are subject to the wrath of Allah. A Prophetic narration in Baihaqi which warns that "If someone tries to obtain [the goods of] this word by lawful means, but wishing to prove himself more affluent than others, to demonstrate his own superiority and to make an impressive display, he will meet Allah (Almighty and Glorious is He) on the Day of Resurrection and find that He is very angry with him."

Thus, we conclude that both extravagance and miserliness produce waste. The former produces waste through overuse or wrong use; hence, *waste-in-use*. The latter produces waste through withholding resources; hence, *waste through non-use* or *waste through underuse*. Having said this, we now turn to a theoretical categorization of this waste through non-use or waste through underuse.

Considering the same social-individual conditions as used for the proposed classification of waste, stingy behavior is assumed to be liable for producing four types of waste. In Figure 2 above, these types have been labelled as chronic waste, inhuman waste, parasitic waste, and retaliatory waste. The following brief description of these types attempts to underscore their key characteristic.

Chronic: The word means continuation of something, especially bad, for a long time. A stingy person does not have inner urge to make beneficial use of resource. When abundance prevails at social level, social pressure on individuals for productive use of their accumulated resource would be reasonably low. Thus, their inertia, accompanied with lack of external demand, will reinforce a mentality of amassing resource for its own sake disregarding its productive use.

Inhuman: This waste occurs when an affluent but miserly person shows reluctance to use his resource for common good in a state crisis in society. What can be more inhuman and crueller than withholding resource when people at large are in dire need of it!

Parasitic: We construe this waste a parasitical one because a stingy individual is more likely to externalize his cost of survival to others. When he himself suffers hardship and his society can afford to bear the burden of subsidies and allowances, he will be tempted to be a social parasite. In this case, what will go waste, at the least, are his person-

embodied physical, psychological, intellectual resources that he could be utilize to achieve self-reliance.

Retaliatory: If falling back on society is not possible because the society itself experiences crisis, a stingy suffering hardship will develop active hatred and resentment against, perhaps a tiny, affluent section of the society. Such resentment always carries the seed of a general social strife, which, if germinated, puts people in active opposition of each other for their mutual destruction. Resultant waste here is awfully huge; rather it is beyond measure.

4. Conclusion

When waste is seen as a post-use phenomenon and classified accordingly, its primary thrust is waste management; resource management gets secondary importance in the form of waste minimization. Since the proposed classification takes waste as an in-use phenomenon, its primary implication is for resource management in a more prudent manner. The user-focused classification and the extended concept of waste bring the holder or the possessor of resource in the forefront, whereas waste, not the waster, is the loci in the discussion of waste as post-use phenomenon. From a sustainability perspective, technical classifications and discussions of waste as objects are important for managing waste. The proposed classification and extension of the concept of waste is important from the same perspective for bringing about positive change in the mindset of the holder of resources, thus creating consciousness for reducing waste.

Waste is generally considered to be a phenomenon in the life of affluent people. This is presumably because wasteful behavior of an affluent person is usually conspicuous by its scale. However, the current discussion on the proposed classification and extended concept of waste suggests that both rich and poor can waste. More importantly, they can waste through extravagance as well as miserliness. Another inference that can be drawn from the discussion is that perception of waste may be contextualized. Food waste by affluent in mass starvation will be perceived differently than the same in a state of abundance. Last but not the least important suggestion is none has the right to waste. This is because nobody is the real owner of what he possesses—this is from Islamic religious perspective. After one's need fulfilment, what is left

with him is not his, it is others. This ethical understanding also clarifies that none has the right to waste.

Acknowledgement

This study would like to acknowledge the financial support of the University of Malaya, Malaysia under the Research University (RU) research grant RF001I-2018.

References

- Adhikari, B. K., Barrington, S., & Martinez, J. (2006). Predicted growth of world urban food waste and methane production. *Waste Management & Research*, 24, 421-433.
- Al-Bukhari, S. M. (1994). *Sahih al Bukhari Vol. 2* (M. M. Khan, Trans.). Lahore: Darrus Salam Publications.
- Aristotle (1953). *The nicomachean ethics* (J.A.K. Thomson, Trans.). London: George Allen & Unwin Ltd.
- Brundtland, G. (1987). *Our common future* (United Nations Brundtland Commission Report). UK: Oxford University Press.
- Crous, H. (2010). *Development of a revised waste classification system for South Africa*, (Draft Regulations and Standards for Waste Classification and Management Report, ESA-HAZR-J-01V3). Retrieved from Department of Environmental Affairs – Republic of South Africa website <https://www.environment.gov.za/>
- Department of the Environment, Transport and the Regions (DETR) & Environment Agency (EA) (1998). *The UK waste classification scheme*. London: Her Majesty's Stationery Office.
- James, M. (2008). Stop wasting food. *Islamic Voice*. Retrieved from <http://islamicvoice.com/>
- Jobe, Z. (2006). *Alternative energy sources for electricity generation: Their "energy effectiveness" and their viability for undeveloped and developing countries* (GP200A Working Paper, Geophysics Department, Stanford University, California). Retrieved from http://srb.stanford.edu/nur/GP200A%20Papers/zane_job_paper.pdf
- Kantor, L. S., Lipton, K., Manchester, A., & Oliveira, V. (1997). Estimating and addressing America's food losses. *Food Review*, 20, 2-12.
- Katoch, S., (2007). Biomedical waste classification and prevailing management strategies. In K. Joseph, R. Nagendran & K. Thanasekaran (Eds.),

- Proceeding of the 2007 International Conference on Sustainable Solid Waste Management* (pp.169-175). Chennai, India: Anna University.
- Miskawayh, A. M. (1968). *Tahdhib al-Akhlaq*. (C. K. Zurayk, Trans.) Beirut: The American University of Beirut.
- Nemzer, M., Page, D. & Carter, A. (2005). *Energy for keeps: Electricity from renewable energy*. Tiburon, CA: Energy Education Group.
- New South Wales Office of Environment & Heritage (OEH). (2008). *Waste classification guidelines part 1: Classifying waste*. Retrieved from <http://www.environment.nsw.gov.au/resources/waste/09281classifywaste.pdf>
- O'Hanlon, L. (2004). Food waste epidemic in America. *Discovery News*. Retrieved from <http://news.discovery.com/>
- Ohno, T. (1988). *Toyota production system: Beyond large scale production*. Portland, Oregon: Productivity Press.
- Peters, J. (2003). Earth trends environmental information. *World Resources Institute*. Retrieved from <http://earthtrends.wri.org>
- Pongracz, E. (2002). *Re-defining the concepts of waste and waste management evolving the theory of waste management* (Unpublished PhD's thesis). University of Oulu, Finland.
- Pongracz, E. & Pohjola, V. (2004). Re-defining waste, the concept of ownership and the role of waste management. *Resources, Conservation and Recycling*, 40, 141–153.
- Rodriguez, A., Serrano, L., Moral, A., Perez, A., & Jimenez, L. (2008). Use of high-boiling point organic solvents for pulping oil palm empty fruit bunches. *Bioresource Technology*, 99, 1743-1749.
- Special issue on sustainable consumption, save today, save tomorrow (2008, July 26). *New Straits Times*. Retrieved from <http://www.nst.com.my/>
- The life cycle of a cell-phone (2004). *United States Environmental Protection Agency*. Retrieved from <http://epa.gov/>
- Tusi, N. A. (1964). *The Nasirean ethics*. (G. M. Wickens, Trans.). London: George Allen & Unwin Ltd.
- What is the average lifetime of a cell-phone? (2008). *Consumer Electronics Questions and Answers*. Retrieved from <http://www.ceqna.com/>
- Woodford, K. & Jackson, G. (2003). *Cambridge advanced learner's dictionary*. UK: Cambridge University Press.
- Yusuf Ali, A. (1991). *The meaning of the Holy Qur'an*. Maryland: Amana Corporation.