Safe City Concept and Crime Prevention Through Environmental Design (CPTED) for Urban Sustainability in Malaysian Cities

Shuhana Binti Shamsuddin [a*], and Natasha Azim Binti Hussin [b]

[a] *Razak School of UTM in Engineering and Advance Technology, Universiti Teknologi Malaysia International Campus, MALAYSIA*
[b] *Department of Urban and Regional Planning, Faculty of Built Environment Universiti Teknologi Malaysia, MALAYSIA*

A R T I C L E I N F O	A B S T R A C T
	According to urban experts crime and fear of crime have long been recognized as a major challenge to sustainable cities. It also has a significant impact on quality of life. In Malaysia the crime index has risen significantly over the last few decades. Local authority plays a role in building cities that are safe for people where effective implementation of CPTED will assist in reducing and preventing crime from occurring. Effective implementation of CPTED can help reduce public expenditure in keeping the city safe. The article concludes that the successful implementation of the CPTED concept in Malaysian cities can be achieved by increasing the awareness and understanding of implementers of the concept. Thus, professionals and policy makers should have an awareness of the importance of CPTED in reducing both the fear of crime and crime rates in the urban environment and thus contribute to urban sustainability. 2013 Am. Trans. Eng. Appl. Sci.

*Corresponding author (Shuhana Shamsuddin). Tel/Fax: +603 26514872. E-mail address: shuhana@ic.utm.my.

1. Introduction

Since ancient times up to the modern society, crime and the fear of crime are often hot topics and always a common matter of discussions and in the daily agenda of any society. It has become a major endemic problem in societies around the world. Crime and fear of crime are among the key factors that negatively impact the social development in any city of any country in the world. In creating a sustainable city, better quality of life is very important because it can affect and influence the way people live and affect their thinking that further defines the success and development of a city. Criminal factor is also a key driver for the individual and the community in determining the place they would like to work, live and send their children to school especially in a city (Colquhoun, 2004). Himilia (2005) claimed that environment that is safe from crime will attract the public and various other types of users at different time and for different purpose. According to Cozen (2002), crime and fear of crime are the significant challenges to the goal of achieving sustainability because an 'unsustainable city' is commonly characterized by "images of poverty, physical deterioration, increasing levels of crime, and perceived fear of crime". Massoomeh *et.al*. (2012) discovered that by reducing crime and fear of crime it can improve the quality of life that is an essential factor in producing developments that are more sustainable. According to Ceccato & Lukyte (2011) poverty and social exclusion impact the crime and offenders distribution in urban areas where safety and security factors become major human needs throughout history (Cozen, 2007a, 2008).

Everyone dreamed of enjoying a peaceful life and live in a safe and prosperous city without the threat of crime. The city that is free from all forms of crime and criminal threats will be able to create a community that has the quality human capital and admirable. Crime and violence have become serious economic and social problems in many countries and the crime rates around the globe continue to escalate (Aldrin Abdullah *et al*., 2012). World Bank discovered that Latin America and Caribbean region are not spared from this problem which particularly happens in poor urban areas (The World Bank, 2008). Malaysia is one of the most rapidly urbanizing countries in Southeast Asia, (Wong, Shaw, & Goh, 2006) and increasing crime rates are one of the challenges facing the nation. High levels of crime index in the urban area can lead to a complex set of factors, including rapid urbanization, persistent poverty and inequality, social exclusion, political violence, organized crime, post-conflict cultures, the emergence of illegal drug use and drug trafficking and authoritarian family structures, among others (World Bank, 2008). Crime also has a substantial

economic cost where in United Kingdom estimates the cost of crime to be in excess of GBP 60 billion yearly. Urbanization is often associated with increasing crimes in urban areas. As economic growth and development of countries increase from one year to another, the crime rate does not decline and nowadays has become more important in the second half of this century (Erdal, 2004). Massoomeh *et.al.* (2011) contended that worldwide concern about population growth and rapid urbanization will continue to address crime as a social problem. Becker in Erdal (2004) pointed that crime become more important during the last forty years that is discussed all over the world and safety becomes a central dimension for contemporary debate on urban sustainable development (Ceccato & Lukyte, 2011).

It is a duty for each person to combat crime in getting a better place to live. Malaysia and other developing countries have experienced rapid cities growth since the 1970s and Malaysia is said to be the fastest developed country in South East Asia in the 1980s. Judy (2008) explained the increased development do affect the city life which present conditions of overcrowded living, congestion, unemployment, lack of social and community networks, stark inequalities, and crippling social problems such as crime and violence. The implication of the physical changes in urban spaces will totally affect the quality of social life. A range of features of the built environment have been hypothesized to have an impact on crime rates (Lorenc et al., 2012). These physical changes such as the buildings and the arrangement of street, public facilities and other outdoor spaces do affect the opportunity of crime that affects the ecosystems and the ecology of the city. It can be adduced that poor physical environmental design contributes towards the possibility of crime occurring (Anastasia & John, 2007). Developments give an impact to the health and safety of residents, minimize a comfortable living environment and also influence the social values (Jamaludin, 2007). He added that the existing cities are facing various physical and social problems and issues arising from uncontrolled and imbalanced urban development such as immediate settlements, traffic congestion, flash floods, landslides, air and water pollution and crime are the current problems in a city.

Siti & Aldrin (2012) also suggest that the physical environment is more important than the social environment to reduce the opportunities for crime to occur because physical design involves elements that can be modified through planning and design. Lamya Rostami & Ali Madanipour (2006) discovered that elements such as physical layout, housing typology and the outlook of the

surrounding environment will prevent crime from occurring therefore creating a safe environment that contribute to a better living quality for people in the cities. The manipulation of the physical urban elements as a crime prevention strategy such as CPTED is a more cost effective strategy for the local authorities in creating a safe city leading towards a sustainable urban environment.

2. Crime Scenario in Malaysia

In Malaysia urban crime rates have increased for the past 32 years since 1997 to 2007 (Siti & Aldrin, 2012). According to the Royal Malaysian Police, the crime index had risen significantly from year 1980 to the year 2009 where the worst index was in 2007 when the number of crime cases skyrocketed from 196,780 cases to 209,582 cases and since then, the total rise in crime rates becomes critical until the year 2009 as shown in Figure 1. In Malaysia the sum of crime rate statistics were 588 murder cases and 3,177 rape cases was equivalent to one person murdered a day (1.6 per day) and more than eight women raped each day (Amar, 2005). Amar (2005) concluded that the crime rate in Malaysia has worsened more than 300% since the year 1991.
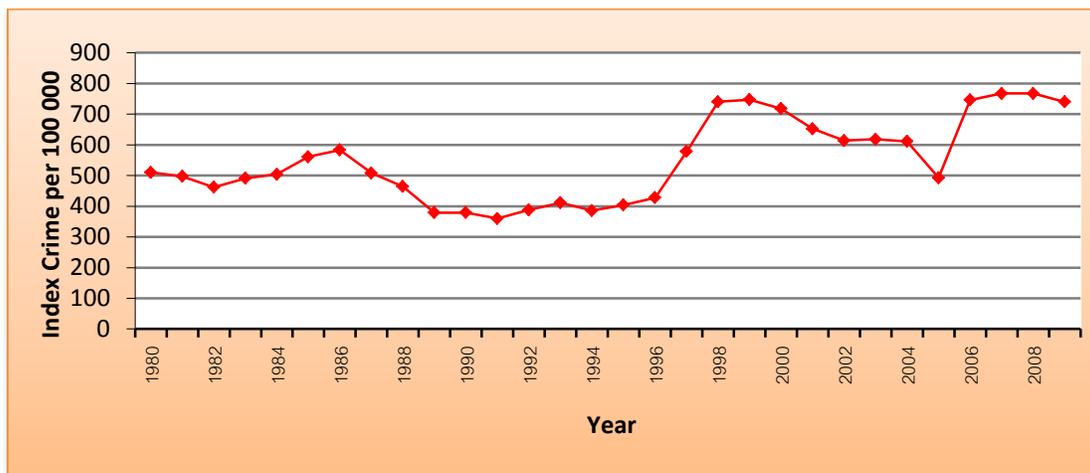
Figure 1: Crime Index per 100 000 in Malaysia from 1980 – 2010
(Data from Royal Malaysia Police, 2012).

RM2.04 billion was allocated for crime prevention programs in Malaysia. (Malaysia 10th Plan 2011-2015). The focus was on street crimes because these types of crimes are traumatic in nature and have a significant impact on people's perception of safety and therefore on their lifestyles. Crime and the fear of crime impact people's quality of life, sometimes with devastating effect irrespective of age, education level, gender, race, religion or wealth. In the polls, people consistently identify crime as one of the top two issues that concern them.

Shuhana Binti Shamsuddin, and Natasha Azim Binti Hussin

Safety is one of the most important aspects used as an indicator in measuring the success of a country as a developed country.   Since 2006 the crime index had risen that decreased the quality of life and increasing the overall economic cost of crime (Government Transformation Roadmap, 2010).   This problem has been identified two years earlier as reported by the Malaysian Economic Planning Unit in the Malaysian 9th Plan report (RMK 9).   According to the Malaysian Quality of Live Index from 1990-2004, public safety had a negative percentage of change which is -21.5%. Crime prevention aspect has then become of the most important visions to be achieved in the National Key Result Area Program (NKRA), launched in 2009 under the Government Transformation Program (GTP) which is a continuation of the Safe City Program since 2004 (Unit Pengurusan Prestasi dan Pelaksanan, 2010).   The aspiration of NKRA is to improve public safety across Malaysia where the targeted actions focused on reducing crime index especially streets' crimes, improve public perception of safety by promoting public participation and build public confidence through judicial system.

In October 2009, the Crime Lab was established by the government to bring together all agencies from across the criminal justice system and other wider parts of the government to set ambitious targets for reducing crime in Malaysia.   These targets were supported by strategies focused on the three desired outcomes, and detailed implementation plans were developed to achieve it.   According to the Unit Pengurusan Prestasi dan Pelaksanan (2010), the GTP target on crime reduction is 5% yearly from the total crime index for the next three years starting 2009. The impact of the success of NKRA program implementation is shown from the Statistics of Royal Malaysian Police on crime reduction of 461 cases nationwide in the year 2009 and start to decrease from that year onwards.   According to the GTP report, this movement had shown encouraging results in which there is a reduction of another 20% in street crimes in December 2010 (Unit Pengurusan Prestasi dan Pelaksanan, 2010).   Addressing crime as a whole will have the impact of increasing the sense of security felt by the people in addition to enabling Malaysia to remain in the ranks of safe countries for tourism and business investments.   Reducing crime is also a vital part of Malaysia's plan to become a fully developed country.

3. Urbanization and Sustainability

Safety is a central dimension for contemporary debate on urban sustainable development

(Ceccato & Lukyte, 2011).   The organization of human settlements has always sought to provide for the safety, security and the well-being of their residents in terms of design and location close to water, food and other vital resources. Safety and security aspects become a main element of a city which also affects the successfulness of a city where Cozens (2007b) suggests that urban sustainability is seriously undermined by crime and the fear of crime.   A safe urban planning and urban environment can be created by the implementation of sustainable principal and focusing on the humans needs. Glasson & Cozen (2011) suggested that of human needs, is a hierarchy of needs that suggests a sustainable environments should cater for biological and physiological needs.

Planning and development of a safe environment should be implemented in a timely manner. The challenges in the planning aspects do not only focus on economic growth but also to ensure the solidarity and peace achieved based on security principles (Jamaludin, 2007).   The design of good environment has an important bearing on the quality of life. Quality of life implies those attributes catering for the diversified and growing aspiration of citizens that go beyond the satisfaction of basic needs. Sustainable human settlement depends on the creation of a better environment for human health and well-being which will improve the living conditions of people and decrease disparities in the quality of their lives.   Indeed, Black noted that; "security is an integral part of sustainability, and it is generally essential if people are to achieve their full potential" (Massoomeh et.al. 2011).   Jamaludin (2007) described that the concept of development has never been previously attempted to harmonize or to strengthen the relationship between the two elements, leading to its presence in the area of development that is always in conflict or incompatible.

Armitage and Gamman (2009) observe that there is a common misunderstanding meaning on sustainable. Sustainability is interpreted as 'environmental' or 'green' and that this interpretation misses the main point of sustainable development, which is to achieve social, economic and environmental outcomes at the same time.   Cozen (2002) comes with early definition on sustainability development which they mention it as a tension between economic and environmental objectives (Massoomeh *et al.*, 2011). Both elements cannot be separated because of the development on the environment requires resources and the environment will require the attention of the developers. Symbiotic ties that bind the development and the environment require people to protect the interests of both elements.   The environment must be maintained and preserved as it is part of the ecosystem of human life.   Environmental degradation will lead to the destruction of human life itself. Development is supposed to be supervised because its impact on

Shuhana Binti Shamsuddin, and Natasha Azim Binti Hussin

humans and the environment is unpredictable. Jamaludin (2007) claimed that sustainable development is the process of change that carries people from one dimension of life into another dimension of life. It is usually identified in tandem with the improvement and the addition of positive values and if the dimensions of life have no positive value, then it would not be called development. Actions such as maintaining surveillance, ensuring and strengthening must be done by humans for the relationship between humans, environment and development which are balanced, friendly, compatible and harmonious as in Figure 2.


Figure 2: Sustainability Development Concept (Modified from Jamaludin (2007)).

Massoomeh et.al. (2011) emphasized that societies are responsible in balancing the social, economic and environmental objectives for sustainable development. Glasson & Cozens (2011) conclude that safety becomes an important aspect of the physical environment in making a city sustainable and livable.

3.1 Definition and Concept of Sustainability

Sustainable development is a form of development that aims to meet current needs without compromising the interests of generations to come. Sustainability can be seen as the sustaining ability of a system to function in the long term an end state in which all human activities can be maintained within the existing capacity of the planet (Glasson & Cozens, 2011).

Noraini (1992) suggests that sustainability is strongly dependent upon the context in which it is being applied and whether, it is based on an ecological, social or economic reason. Cornell Sustainable Campus in New York emphasized that sustainability is created based on three elements so called "triple bottom line" that are related to each other (Figure 3).
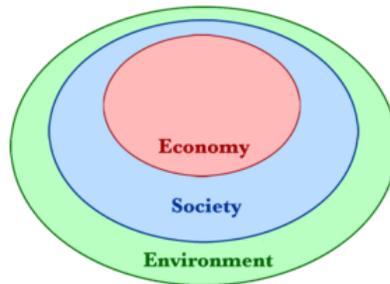
Figure 3: Nested sustainability
(modified from Cornell Sustainable Campus, Cornell University, 2005).

Cozen (2008) also described sustainability as a "triple bottom line" reflecting the importance of environmental, social and economic factors. A deeper definition is by Roy (1995), where it is defined as a process of change that affects the direction of investments, the orientation of technology, resource allocation, and institutional development and function of present needs and aspirations without endangering the ability of natural systems to absorb the impact of human activities, and without compromising the ability of future generations to meet their needs and aspirations. Ott (2003) emphasized on equal opportunity for all people to get them a good life where safety and security aspects have become part of the factors in achieving the sustainable development. Cozen (2008) admits that security is an integral part of sustainable development where today's society must be fair to maintain the environment so that it can also be enjoyed by future generations.

3.2 Sustainable Development in Malaysia

Sustainable development and sustainable human settlement in the city requires cooperation and complementary actions among interested parties. The mixture of interested parties includes governments, non-governmental organizations, community-based organizations, private sectors and the public. The Malaysian government is continuing the efforts to efficiently achieve sustainable development in all aspects and also to mitigate the environmental impact of development activities. According to the Unit Perancang Ekonomi (2010) report, the actions will emphasize on improving the quality of life which is the social development aspect and other related environmental issues. A serious commitment by the Malaysian government regarding the sustainability issue is by its involvement in various international agreements such as Agenda 21, the United Nation Programmed for Action for Sustainable Development, Millennium Development Goals and the Plan of Implementation of the World Summit on Sustainable

Shuhana Binti Shamsuddin, and Natasha Azim Binti Hussin

Development (WSSD). According to EPU, public safety is improved by the reduction in crime rate from 7.2 percent crimes per thousand population in the year 2000 to 6.2 percent in 2002. The incidence of crime declined with the implementation of various strategies that included crime prevention campaign and through the expansion of the neighborhood program (Economic Planning Unit, 2003). Economic Planning Unit (2003) discover in the year 1990 to 2004, all indicators of MQLI were making a good progress except for Public Safety and Environment (Economic Planning Unit, Malaysia RMK 9). Due to this, crime prevention will be a major task to be taken seriously by the government in establishing Malaysia as a country that is sustainable with a sustainable city.

In the 21st Century, urban development in Malaysia faces enormous challenges. The transformation of a community with a positive attitude will influence the process of urban development in the country for it to be more sustainable and prosperous.

4. Safe City Concept

Cities have many impacts on the environment and upon its inhabitants both in contemporary terms and for future generations. Industrialization and urbanization have created a range of new threats to public health, safety and well-being. Cozen (2008) explains views by Mayhew and Booth on causal connections between crime and area with poor economic, social and environmental performance. The rapid and unplanned expansion of cities results in overcrowding, pollution, poverty, disease, crime and the cities becoming containers of problems as well as places of vitality. The city today is facing the rapid urbanization with the concentration of urban population and the sprawl of cities into wider geographical areas and the rapid growth of megacities are among the most significant transformation. Ceccato &Lukyte, (2010) stated that Hall and Hubbard (1998) claimed that being a safe city is part of having a good image, a quality that helps attract investments.

The implementation of the concept of public safety in the town or city has been one of the main agenda in developing countries today. Without the consideration on safety aspects, living in an urban area will be difficult for people's well-being. A city that is free from all kinds of physical threats, social and mental disorders is protected from any tendency that could threaten the welfare

of society and will contribute in creating a prosperous, secure and comfortable environment. In the 20th century, the urbanization process has seen the development of a city to be largely unplanned and growing like mushrooms without proper management by the local authorities. A city should be a safe place to live, work and play. Power in Colquhoun (2004) claimed that there are three aspects that are related to each other that influence the success of a city and a society that occupy the city-housing, public facilities such as schools and shops and urban environment that influences the behavior of the local community.

4.1 Home Zone Concept

Safe City Concept Development in England has been adopted and applied successfully by using the approach of Home Zones Concept (Jamaludin, 2007). This safety concept is an approach in residential areas that gives priority to pedestrian users other than vehicle users where the vehicle speed does not exceed the permitted speed that is measured based on the speed of pedestrians. A neighborhood planning layout such as the cul-de-sac and Radburn Layout are some of the Home Zone concepts which have been implemented by the developed countries.

4.2 Defensible Space Concept

This concept was developed by architect and city planner Oscar Newman which encompasses ideas about crime prevention and neighborhood safety. This concept aims to restructure the physical environment and housing to be livable and the area can be controlled by the occupants (Nor, 2006). The theory argues that an area is safe when people feel a sense of ownership and responsibility by creating space territory. Newman highly focused on the territorial concept and functioning. Territoriality involves the use of physical elements in creating a sense of belonging among communities. If an intruder can sense a watchful community, he feels less secured to commit any crime. Newman asserts that when each space in an area is owned and cared for by a responsible party, crime can be prevented. The idea is that crime and delinquency can be controlled and mitigated through environmental design. According to Colquhoun (2004), Newman's concept of space has four design elements; main territoriality, surveillance, image-building and home along with other facilities.
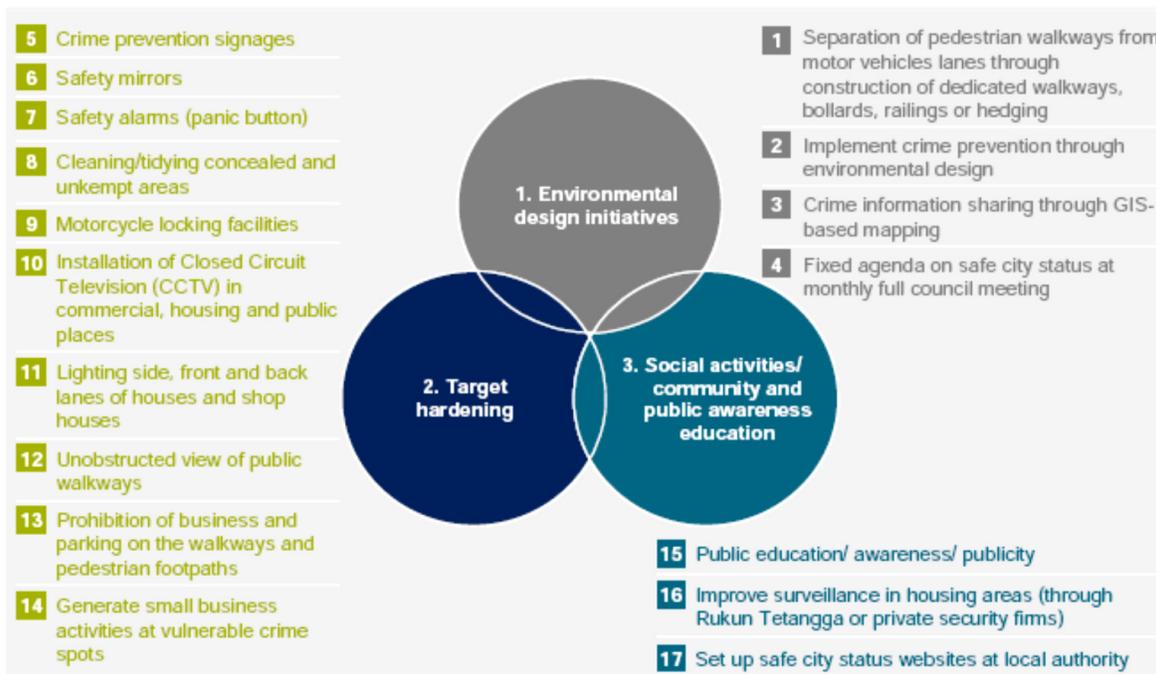
Meanwhile, Nor (2006) and Mohit and Aishath (2011), contended that the theory of space as having three important principles to be practiced in order to achieve a safe home

Shuhana Binti Shamsuddin, and Natasha Azim Binti Hussin

environment-public and private space, territory and control. In their views, we can conclude that there are two main elements i.e., territoriality and surveillance as they relate to the concept of defensible space.

5. Establishment of Safe City program in Malaysia

Safe and comfortable city will have implications on the economy and national stability. The importance of establishing Malaysia as a safe country with safe cities has been pushing the government to implement a safe city program since 2004. Safety is an important aspect to Malaysia and to any country aspiring to achieve developed nation status. Vision 2020 is now only 10 more years away and the government is trying to ensure that Malaysia is one of the safest and most peaceful countries that complies with the indicators set by the Global Peace Index conducted by the Institute for Economics and Peace. Started in 2004, the Safe City Program contains 23 steps of crime prevention elements. The program involves various agencies such as Town and Country Planning Department (TPD), Royal Police of Malaysia, Malaysian Crime Prevention Foundation (MCPF), local authorities and other agencies that play a role in achieving the goals.

Safe City initiatives to promote crime prevention

5 Crime prevention signages
6 Safety mirrors
7 Safety alarms (panic button)
8 Cleaning/tidying concealed and unkempt areas
9 Motorcycle locking facilities
10 Installation of Closed Circuit Television (CCTV) in commercial, housing and public places
11 Lighting side, front and back lanes of houses and shop houses
12 Unobstructed view of public walkways
13 Prohibition of business and parking on the walkways and pedestrian footpaths
14 Generate small business activities at vulnerable crime spots

1. Environmental design initiatives
2. Target hardening
3. Social activities/ community and public awareness education

1 Separation of pedestrian walkways from motor vehicles lanes through construction of dedicated walkways, bollards, railings or hedging
2 Implement crime prevention through environmental design
3 Crime information sharing through GIS-based mapping
4 Fixed agenda on safe city status at monthly full council meeting

15 Public education/ awareness/ publicity
16 Improve surveillance in housing areas (through Rukun Tetangga or private security firms)
17 Set up safe city status websites at local authority

Figure 4: Safe City initiatives to promote crime prevention.
Sources: Government Transformation Roadmap in Tenth Malaysia Plan 2011-2015

The idea for the establishment of Safe City started on 8 January 2004. The concern on the rising number of crimes was raised by the former Prime Minister, Yang Amat Berhormat Datuk Seri Abdullah Ahmad Badawi in a Cabinet Meeting. Resulting from the meeting, the Cabinet proposed the creation of safe city and town in the country to overcome the crime problem. Following the outcome of the meeting, on 11 October 2004, The National Council for Local Government (MNKT) endorsed this program and instructed all 38 local authorities to incorporate the Safe City concept in their area. There are 23 crime prevention steps that are divided into 3 main strategies; Strategy 1: Environmental Design Initiatives, Strategy 2: Target Hardening and Strategy 3: Management and Community (Figure 4).

The implementation of the safe city program has been successful in binding the cooperation of all parties whether government agencies, private sector and local communities to jointly combat and reduce crime. As a result, this program has successfully established a lifestyle and personality as well as to create a sustainable society.

6. Safe City Concept in Malaysia

According to the Ministry of Housing and Local Authority (MHLA), a city must be free from all physical, social and mental traits. The environment must not generate an atmosphere that will encourage incidents that threaten local prosperity. Most importantly, dwellers must always be at the most safest, prosperous, healthy and happy. There are four main objectives of Safe City concept drafted by MHLA, shown in Figure 5.

Figure 5: Safe City Aims
(Modified from Nor (2006) by Federal Department of Town and Country Planning, 2005).

Shuhana Binti Shamsuddin, and Natasha Azim Binti Hussin

6.1 The Implementation of Safe City Program in Malaysia

The Safe City program has been running for almost seven years and has been reviewed twice in 2008 and 2009 to ensure the capability of the resources and the practicality of the actions taken based on the current crime trends and local needs. The first implementation was started in 2004 and consisted of five immediate actions to be taken by all local authorities. These five steps were basic prevention ways that concentrated more on physical actions which were not related and did not involve other agencies and government bodies. The basic steps were separation of pedestrian walk from the motorist, supply of bollard or gate, cleaning and tidying up undergrowth and hidden area, public roads not hidden or blocked from public sight and brightening of dark areas that could become crime targets or crime spots. Meanwhile on 26 July 2010, the second implementation of Safe City Program started after the first program had been reviewed. The government decided to make the safety aspect as one of the six core businesses in the National Key Result Area (NKRA) missions. This strategy is to ensure Malaysia's achievements are not focusing only on physical development but also the physiological development.

In 2004 only 39 of the 149 local authorities participated in the safe city program. Implementation of a safe city was intensified by making the crime prevention aspect as the government's main target started in 2009. The government's seriousness in the implementation of safe city program was illustrated by the amount of allocation provided to 149 local authorities in 2011 to mobilize and expand from the previous Safe City program in 2004 with an allocation of RM102 million. Achievement of the successful implementation of the Safe City was reflected in the overall index which remained stable in 2008, where early 2009 projections indicated that it had fallen behind the incensement of violence crime (Government Transformation Programme, 2010). According to Dato' Wira Chor Chee Heung (2010) in opening ceremony of the Safe City Program by The Ministry of Housing and Local Government, in 2009 the Global Peace Index (GPI) recorded Malaysia as the 3rd safest country in Asia after Japan and Singapore and 26th amongst 144 countries globally. The Institute of Economic & Peace GPI 2010 reported that Malaysia was then ranked 22nd in the world, overtaking Singapore as the safest country in South East Asia and ranked second after Japan in comparison to other Asian countries.

Despite these achievements, violent crime prevention should be enhanced because this

category of crime has an impact on the psychology and emotions of Malaysian society where a stable and sustainable growth is a result of a stable and healthy society. The current safe city program is more focusing on Target Hardening Strategy where the implementation was carried out on a large scale in 2009. This strategy involved the regular police presence in hot spot areas with a potential for crime to occur where public fears of crime can be eradicated as they are able to carry out their daily activities peacefully. However, the increasing of number on police officer also gives effect on the nation's expenditure, therefore collaboration between the Royal Malaysian Police and the Royal Army Malaysia was formed in order to utilize the existing human resources efficiently and effectively in crime prevention program in the city area.

The implementation of the other two strategies is still new in Malaysia. For CPTED, the extensive implementation started in March 2010. As it is an ongoing process the results from the implementation cannot be evaluated yet. CPTED strategy is a long term one that involves many parties and crosses over a long period of time.

7. Urban Design and Crime

Crutchfield (2002) agreed and found that during the rapid social change, growing and expanding cities would be hotbeds of crime whereas safety and security are often the first priority of the urban poor in either develop and developing countries (Cozen, 2008). Glasson & Cozen (2011) also opined that crime and fear of crime are the most important issues in many countries worldwide such as in United Kingdom where the population ranks crime as being the most important issue affecting their perception of a "good place to live". A survey done in Australian on 2004 shows that 26% out of 7000 respondents felt unsafe while walking after dark in their own neighbourhoods. Erdal (2004) claimed that the crime rate will increase as the urban areas become larger and that it increases along with the population growth and rising economic development of towns and cities (Jamaludin, 2007).

A city is a place to generate opportunities to meet the economic, social and physical needs. A city is also the preferred choice for investors to come and help boost the economy of a country. In line with the rapid development and of cities around the world, the urban crime rate has also increased. Massoomeh et.al. (2011) claimed that in recent years, the rapid urbanization growth has caused various social, environmental and security challenges. Cozen (2008) indicated that the effect of the built environment on crime that its design and modification can be used as an effective

Shuhana Binti Shamsuddin, and Natasha Azim Binti Hussin

planning tool as Churchill argued in his speech to the House of Cammons in 1943 that 'we give shape to our building, and they in turn shape us'. Urban design has a potential implicated with crime acts which Nes (2009) claimed that human behavior takes place in space and the spatial layout of the environment provides various opportunity for people's interaction. Work from several researcher comments that specific elements of urban design became widely associated with enhancing or reducing opportunities of crime (Cozen, 2008). The safety aspect is a basic and essential need that must be applied in the planning of the urban environment where prevention from any crime from happening will make the city dwellers enjoy a better life and good health.

Crime and fear of crime are global issues that occur in most cities around the world. Both crime and the fear of crime are serious issues confronting societies and contribute to decline the quality of life. The safety aspect is a basic and essential need that must be applied in the planning of the urban environment where prevention from any crime from happening will make the city dwellers enjoy a better life and good health.

8. Crime Prevention Through Environmental Design (CPTED)

The organization of human settlement has always sought to provide for the safety, security and the well-being of their residents in terms of design and location close to water, food and other vital resources. The CPTED was started in the United Kingdom in the late 1960s when the federal government took an interest in crime prevention in urban housing areas. A few serious attempts were made to develop a workable concept for controlling crime through architectural planning and design (Gardner, 1981). He explained that several studies financed through the Law Enforcement Assistance Administration and the Department of Housing and Urban Development in the late 1970s, demonstrated that architectural design could be used effectively to influence crime rates in housing development areas. In which the building's design, streets arrangement and outdoor space planning can influence crime and level of fear of crime (Massoomeh et.al 2011).).

The concept of Crime Prevention through Environmental Design (CPTED) is an idea of how the design of physical environment plays an important role in the prevention of criminal acts by their behavior. Based on the roots of CPTED from the criminologist and sociologist, C.Ray Jeffery's work (1971) involving a more general notion of crime prevention which includes the external physical environment and the internal physical organism as well as interaction between

the two. Cozens (2007) explained the theory is based on the argument that most crime events are associated with the opportunities created by environmental design, meanwhile the CPTED approach is on the basis of reducing opportunity, which aims to manipulate the built environment in order to affect users' behavior that will reduce crime and the fear of crime.

Jeffery in Robinson (1999) explained the basic premise that crime prevention involves both the psychobiological aspects of human nature and the role of the external physical environment in human behavior. On the external physical environment aspect, he suggested that the urban design, including the design of streets, parks, terminals and super highways, could prevent crimes from occurring by reducing the "opportunities" to the criminals. Knepper in Massoomeh *et al* (2011) explained, the Opportunity Theory of Crime Prevention was developed during the 1970s and was initiated and expanded by researchers from UK Home Office Research Unit. Gardner (1981) also stipulates that CPTED is an idea using the physical environment as a protection against any attack. The goal is to reduce the opportunities for crime to occur by creating a defensive environment with approaches from both the physical and the psychological aspects at the same time. This reduction is achieved by employing physical design features that discourage crime, while at the same time encouraging legitimate use of the environment. The essence of CPTED in creating a defensive environment is an approach from both the physical and the psychological aspects. Robinson (1999) explained that to ensure the effectiveness of CPTED, it should be applied both to external and internal physical environments, and to the environments of the place and the offender, respectively.

The term "environment" in standard CPTED definitions includes only the external environment of the place and not the internal environment of the offender. While Crowe (2000) points out, the CPTED philosophy embodies several concepts which is the term "environment" includes people and their physical and social surroundings (Rebecca, 2007). According to Robinson (1999), Carmen proposed a re-definition of the term "environment" to include both the macro (external) and the micro (internal) levels of analysis. He added that most of the literature related to CPTED over twenty five years has not followed the suit and they have neglected the internal physical environment of individuals in doing so. It is clear that Jeffery's concept of CPTED already has evolved into a crime prevention approach that encompasses both the external environment of the place and the internal environment of the offender.

CPTED theory is very influential in law enforcement and architectural communities, particularly in urban residential development and public housing design and retrofit. Throughout the 1980s, there were also a handful of architects, planners, and academics that advanced the field of CPTED, and it is to these pioneers that contemporary CPTED owes its existence. From Jeffery's original works started in 1971, an evolution of the CPTED has begun. The evolution of CPTED concept can be seen from the viewpoint and the reaction from criminologist, planner, architect, academic, government and including the corporation.

Crowe (2000) and Clarke (1998) explained that the concepts of the Crime Prevention Through Environmental Design (CPTED) program is a manipulation of the physical environment in producing behavioral effects that will reduce the incidence and fear of crime that will help in improving the quality of life (Rebecca, 2007). According to Robinson (1999), CPTED was described as "focuses on the settings in which crimes occur and on techniques for reducing vulnerability of the settings" because its central premise is that crime can be facilitated or inhibited by features of the physical environment (Clarke, 1998). A proactive design approach used by urban planners to manage settings for incidences of crime and the fear of crime in building environments are buildings, street, open space and parks (Lisa, 2007). The literature on crime prevention is convincing in its claim that crime can be prevented through manipulating the design of each urban component and their relationship to one another and to the physical environment of the surrounding neighborhood. Thus, the concept and approach to Crime Prevention Through Environmental Design (CPTED) has been selected as one of the methods of crime prevention initiatives in Malaysia (Siti & Aldrin, 2012) as the theory of CPTED is no doubt that it will be one of the best preventive measures.CPTED should be implemented by local authorities in Malaysia in ensuring the safety and sustainability of cities in the future due to the fact that CPTED is considered to be one of the approaches that deems social interaction as one of the more important determinant factors of its success (Cozens et al., 2005). It should be implemented by local authorities in Malaysia in ensuring the safety and sustainability of cities in the future.

8.1 Implementation of Crime Prevention through Environmental Design (CPTED) in Malaysia

In line with the implementation of the Safe City 2004, the implementation of CPTED is also in progress and should be implemented in cities and towns in Malaysia. The CPTED implementation is more on the building design aspect, while in the planning aspects the implementation is by using active gated and guarded concept only. Environmental Design Initiatives is one of the Safe City strategies by the Federal Department of Town and Country Planning to create a physical design environment that helps in preventing and combating criminal activities from occurring. CPTED implementation by local authorities is not comprehensive and thorough in the past, but it is getting better nowadays. To some implementers, CPTED concept in Malaysia is still new. A lack of awareness and understanding of CPTED concept by local authorities hinder the comprehensive implementation of it. In order to help local authorities implement CPTED successfully, the ministry has taken urgent steps by providing the CPTED Implementation Guide that is the basic indicators in guiding the implementers in any development process.

The CPTED Implementation Guide was introduced in March 2011. It is a reference document for all relevant decision makers, planners, managers and designers. This document contains a summary of concepts, general guidelines and user-friendly checklists. It outlines the basic requirements for the design and management of the built environment to the community, city, and town for a safer and more secured environment. Implementation of CPTED is not only used for new development but also be implemented in the existing development to create safer cities in Malaysia. According to Kuala Lumpur City Hall, in order to create safe communities there are three basic CPTED principles to be incorporated in the urban developments.

i. *Natural Surveillance*

   A planning concept that maximizes visibility of people, public areas and building entrances, door and windows that look onto public area.

ii. *Territorial Reinforcement*

   Utilizing landscape plantings to define property lines and distinguished public with private spaces.

Shuhana Binti Shamsuddin, and Natasha Azim Binti Hussin

iii.   *Natural Access Control*

Design concept that denies access to crime targets.

(Kuala Lumpur City Plan 2020, 2008)

Massoomeh et.al. (2011) claimed that there is an evidence suggesting that integrating physical safety in a project from the start rather than modifying it at a later stage can decrease design costs in the long-term (Crowe, 2000). Therefore, all professionals in local authority that involve in development such as architects, designers and planners should take safety aspects into consideration in new developments at the planning and design stage because it is an essential task to produce developments that are sustainable. These principles should be incorporated in the planning and design aspects and should be considered for approval of public projects by the local authorities. The successful implementation of CPTED is not dependent on the local authorities alone. As a Minister of Housing and Local Government of Malaysia, Dato' Wira Chor Chee Heung, (2010) emphasize on cooperation and communication of the real estate developers and the consultants is a also contribute to the key success factor of CPTED implementation in Malaysia. CPTED implementation needs creativity of the implementers in manipulating and creating a safe environment in his speech when officiate the seminar CPTED by the Town and Regional Planning Department.

9. Conclusion

Crime Prevention through Environmental Design (CPTED) is part of the strategies for making a city safer.   A safe city environment is an on-going process that must be evaluated in context and from time to time.   The initial results from the strategies of CPTED's implemented in 2004 by the local authorities can be concluded as not successful due to the crime index rate that rose year by year. Hence, safety becomes the main objectives in enhancing and making cities in Malaysia safer and more sustainable in the future.   Effects of a comprehensive implementation of CPTED cannot yet be identified as a new Implementation Guide has been available officially only in March 2011. Whether the effect is positive or negative, the crime prevention program should be built gradually and involve many agencies and the urban population in our efforts to successfully promote and maintain safety.   The role of crime prevention in achieving urban sustainability goals must go beyond tackling crime and fear of crime at local levels in Malaysia cities.   In Malaysia, safety

aspect has become a main dimension of urban sustainability where the overall society and nation's development depend on it.

10. Acknowledgements

11. Reference

Aldrin Abdullah, Nordin Abd Razak, Mohd Najib Mohd Salleh, Siti Rasidah Md Sakip, 2012, Validating Crime Prevention through Environmental Design Using Structural Equation Model, in ASEAN Conference on Environment-Behaviour Studies, Savoy Homann Bidakara Bandung Hotel, Bandung, Indonesia, 15-17 June 2011,

Amar Singh Sidhu. 2005, The Rise Of Crime In Malaysia; An academic and statistical analysis, Journal of the Kuala Lumpur Royal Malaysia Police College, No. 4, PDRM.

Armitage R, Gamman L. Sustainability via Security: A New Look. Built Environment 2009;35(3):297–301.

Anastasia, L.-S. & John, E. E. (2007) Crime Prevention and Active Living American Journal Of Health Promotion, 21, 380-389.

Chor Chee Heung, 2010, Speech in "Towards Greater Cities and Better Living: Environmental Design for Crime Prevention", in Crime Prevention Through Environmental Design (CPTED) Seminar 2010

Ceccato. V , and Lukyte. N, 2011, Safety and sustainability in a city in transition: The case of Vilnius, Lithuania , Cities, Volume 28, Issue 1, February 2011, Pages 83-94

Clarke, Ronald V. 1998, The Theory Of Crime Prevention Through Environmental Design, School of Criminal Justice, Rutgers University, USA.

Colquhoun, Ian. 2004, Design Out Crime: Creating Safe and Sustainable Communities, Architectural Press

Cozens, P. 2002, Sustainable Urban Development and Crime Prevention Through Environmental Design for the British City. Towards an effective Urban Environmentalism for the 21st Century, Cities, Vol 10, No.2, pp. 129-137

Cozens, P. M., Saville, G. & Hillier, D. 2005, Crime Prevention Through Environmental Design

(Cpted): A Review And Modern Bibliography. Property Management, 23, 328-356.

Cozens, P., 2007a. Planning, crime and urban sustainability. Sustainable Development and Planning III 1, 187e196.

Cozens, P., 2007b. Public health and the potential benefits of crime prevention through environmental design. New South Wales Public Health Bulletin 18, 232e237.

Cozens, P. 2008, Crime prevention through environmental design in Western Australia: planning for sustainable urban futures. International Journal of Sustainable Development and Planning, 3(3), 272–292.

Crowe, Tim. 2000, Crime Prevention Through Environmental Design. 2nd edition. Boston: Butterworth - Heinman.

Crutchfield, Robert D.; Kubrin, Charis E. 2002, *Urban Crime*, Encyclopedia of Crime and Justice.

Gardner, Robert A..1981,Crime Prevention Through Environmental Design, Security Management Magazine.

Glasson. J & Cozens. P.2011, Making communities safer from crime: An undervalued element in impact assessment, Environmental Impact Assessment Review 31 (2011) 25–35.

Economic Planning Unit. 2003, Mid Term Review of the 8th Malaysia Plan 2001 - 2005 (RMK 8), Prime Minister's Department Malaysia.

Erdal Gumus. 2004, Crime in Urban Areas: An Impirical Investigation, Akdeniz İ.İ.B.F. Dergisi (7), 98-109, Osmangazi Üniversitesi İ.İ.B.F. Maliye Bölümü, Öğretim Üyesi.

Himilia Selamat. 2005, Aspek Keselamatan Jalan dan Kemudahan Pejalan Kaki di Pusat Bandar Dari Perspektif Wanita: Kajian Kes Jalan Tuanku Abdul Rahman Kuala Lumpur, Universiti Teknologi Malaysia.

Institute of Economics & Peace Report. 2010, Methodology, Results and Findings, Global Peace Index.

Unit Pengurusan Prestasi dan Pelaksanan (PEMANDU). 2010, Government Transformation Roadmap (GTP). Jabatan Perdana Menteri

Unit Perancang Ekonomi (EPU). 2010. Rancangan Malaysia Kesepuluh 2011-2015. Jabatan Perdana Menteri.

Jacobs, Jane. 1961, The Death and Life of Great American Cities. New York: Random House.

Jamaludin Mustafa, 2007, Aspek Keselamatan Awam Dalam Pembentuk Bandar Selamat Di Malaysia: Kajian Kes Alor Setar, Kedah, Universiti Sains Malaysia

Judy L. Baker. 2008, Urban Poverty: A Global View, Urban Papers for The International Bank for Reconstruction and Development/The World Bank

Kuala Lumpur City Hall, 2008,   Kuala Lumpur Structure Plan 2020.

Lamya Rostami Tabrizi & Ali Madanipour. 2006, Crime And The City: Domestic Burglary And The Built Environment In Tehran. Habitat International, 10**,** 932-944.

Lisa Jorgensen. 2007, Crime Prevention Through Environmental Design,   California State University, Sacramento, Vol. 63(3), Pg 26.

Lorenc.T, Clayton.S., Neary.D., Whitehead.M., Petticrew.M., Thomson.H., Cummins.S., Sowden.A., Renton.A. 2012. Crime, fear of crime, environment, and mental health and wellbeing: Mapping review of theories and causal pathways. Journal Health & Place 18 (2012) 757–765

Massoomeh Hedayati Marzbali, Aldrin Abdullah, Nordin Abd. Razak, Mohammad Javad Maghsoodi Tilaki, 2011, A Review of the Effectiveness of Crime Prevention by Design Approaches towards Sustainable Development, Journal of Sustainable Development, Vol. 4, No. 1; February 2011

Massoomeh Hedayati Marzbali, Aldrin Abdullah, Nordin Abd. Razak, Mohammad Javad Maghsoodi Tilaki, 2012, Validating crime prevention through environmental design construct through checklist using structural equation modeling, International Journal of Law, Crime and Justice 40 (2012) 82e99,

Mohit, Mohammad Abdul, and Elsawahli, H. M. H. (2010). Crime And Housing In Malaysia: Case Study Of Taman Melati Terrace Housing In Kuala Lumpur. Asian Journal Of Environment-Behaviour Studies, 1(3), 26-36.

Mohit, M.A and Aishath Abdulla (2011). Residents'Crime Experince and Safety Perceptions In Gated And Non-Gated Low Middle Income Communities In Kuala Lumpur, Malaysia. Journal Of Architecture, Planning & Construction Management, Vol. 1 Issue 1, Pp 71 -76. 2011.

Noraini Jaafar.1992, Sustainable development in perspective, definition, concepts and policy issues. In: Conference On Development On Malaysian Natural Resources, 29-30 September, 1992, Bilik Jumaah, Universiti Teknologi Malaysia

Nor Eeda Ali. 2006, Pembangunan Komuniti Di dalam Perlaksanaan Konsep Bandar Selamat, Universiti Teknologi Malaysia

Nes, A. V., & Rueb, L. 2009, Spatial Behavior in Dutch Dwelling Areas – How Housing Layout Affects the Behavior of its Users. Paper presented at the 7th International Space Syntax Symposium, Stockholm.

Ott, C. 2003, The Case for Strong Sustainability In: Ott, K. & P. Thapa (eds.).Greifswald's Environmental Ethics. Greifswald: Steinbecker Verlag Ulrich Rose. Retrieved on:

2009-02-16.

Ray, Jeffery, C. 1971, Crime Prevention Through Environmental Design. Beverly Hills, CA: Sage Publications.

Rebecca Lynn Wenzelm. 2007, CPTED: Interpreting Contemporary Security Practices In The Era Of Homeland Security, , University of Texas

Robinson, Matthew B. 1999, The Theoretical Development of 'CPTED': 25 Years of Responses to C. Ray Jeffery. Appears in: Advances in Criminological Theory, Vol. 8.

Roy F. Weston. 1995, Sustainable Development: To Better Understand the Concept, Department of Environmental Protection, Commonwealth of Pennsylvania.

Siti Rasidah Md Sakip & Aldrin Abdullah. 2012, Measuring Crime Prevention through Environmental Design in a Gated Residential Area: A Pilot Survey, Social and Behavioral Sciences 42 (2012) 340 – 349

World Bank, Latin America and Caribbean Region. 2008, Urban Crime and Violence in LAC: Status Report on Activities, International Bank for Reconstruction and Development / The World Bank

Wong, T.C., Shaw, B. J., & Goh, K. C. 2006.Challenging sustainability: Urban development and change in Southeast Asia (2nd Ed.).   California: Marshall Cavendish Academic.

Dr. Shamsuddin is an Associate Professor at the Razak School of Engineering and Advanced Technology, Universiti Teknologi Malaysia International Campus, Kuala Lumpur. She is the Head of Green Cities and Construction Research Group, Construction Research Alliance, UTM and Program Coordinator for Msc Sustainable Urban Design in Razak School. She specialises in urban design and has published many books and papers internationally. She has won a bronze medal for her research, the Royal Town Planning Institute UK prize for academic excellence and featured as a distinctive researcher in a poster exhibition on 'Women and Science' at the Malaysian National Science Centre.

Natasha Azim Hussin earned her Degree in Architecture with Honours from the Universiti Teknologi Malaysia in 2004.   She is currently an architect in Urban Design and Building Department for Kuala Lumpur City Hall.   With 8 years working experience with City Hall, she has been involved in the directly in several of planning and design guidelines specifically for the Kuala Lumpur. Her focus on transforming the Kuala Lumpur Structure Plan 2020 and Kuala Lumpur City Plan into physical development by ensuring the all aspects of urban design, planning and architecture comply with the all requirements.

Peer Review: This article has been internationally peer-reviewed and accepted for publication according to the guidelines given at the journal's website.