INTRODUCTION

1. Background

Urbanization refers to migration of population from rural regions to towns and cities. As the cities and towns reap most of the benefits of innovations in the fields of science and technology, urbanization still continues to take place in them. As a result of this, the cities and its suburbs spill over to the rural areas along their boundaries, and this spread is termed as urban sprawl. This phenomenon is a multifaceted concept, which includes the spreading outwards of a city and its suburbs to its outskirts to low-density and auto-dependent development on rural land, high segregation of uses (e.g. stores and residential), and various design features that encourage car dependency. This, in short-terms would be a perfect solution for individual preference. However, in terms of communal level, this ideology becomes destructive, causing many issues on socio-cultural, environmental, and economic domains. For an instance, development of a highway would cause various environmental issues including the destruction of habitat corridors. This therefore demands passive ways of sustainable approaches for the urban sprawl in agriculture based developing countries like Sri Lanka.

Un-managed ‘Sprawled’ cities could cause both losses of surrounding natural land leading to many problems such as floods due to blockage of natural rainwater drainage, social problems and threats with wasted lands, as well as increasing concerns about the environmental effects of automobile emissions, particularly in relation to climate change which are not
sustainable. Another instance on economy would be the land affordability which causes people to further move away; while creating blank spaces within the urban environment. On the other hand, transportation needs will further require parking allotments, rail road reservations, rail yards, etc for its operation: which causes more “unused lands” for passive development.

With a vision of “creating a better future for the world, economically, socially and environmentally”, Brundtland Commission has pioneered a concept called Sustainable Development under the publication of Our Common Future in 1987 (World Commission on Environment and Development, 1987). However, the world is still struggling to keep the concept “alive” in front of many practical contradicting factors such as an ever-increasing population, and more importantly, an almost exponential growth in the use of resources, many of them non-removable (Elkin et al., 1991). The world’s urban areas therefore, play a significant role in terms of determining whether sustainable development is an achievable goal in front of these contradictions. This is mainly because, according to (Rodrique, 2005) the urban population is increasing proportionately with the global population. According to (Haughton & Hunter, 1994) and (World Bank, 2004), the phenomenon of both population growth and urban population increase is visible in Developing Countries, such as Sri Lanka, India, Africa, etc. According to
The primary reason for *urban sprawl* is the **changing residential pattern** of the urban core area (Central Business District - CBD). He further states, while population at the urban margin increases through ever expanding urban sprawl; the population of the inner residential zone adjacent to the CBD decreases. More and more people are living further and further away from the CBD; creating *Urban Sprawl*.

A question arise, **how can we manage sprawling** in a time where land demand is high for both agriculture and population growth? The solution lies on **handling land with much care** because it is a scare resource. Every inch of land is valuable and should not be wasted.

Wasting large amount of valuable lands within city centers for car parks should be **minimized**. Rather than developing horizontally, why not try vertical development? On the other hand, within current urban contexts, one could identify many wasted lands; even in Colombo, Sri Lanka’s business capital. (Trancik, 1986) states that most of the land of an urban context is **wasted mainly due to parking requirements**. What happens if these core areas are “**compacted**” to allow more while minimizing the parking requirements by implementing better transport solutions? It is obvious that the need of urban sprawling would be tremendously reduced if latter happens. Therefore, it is quite beneficial to study on strategic ways “of how”, which helps to achieve the above aspect.

a. **Transit Oriented Development (TOD)**

![Fig](image)

*Fig:* The primary intention of TOD: pedestrians are prominent than vehicles; thus, **making compacted development with more public realm**.

The concept of Transit Oriented Development has been identified as one of the **most sustainable efforts** of urban designing by many researches and urban planners (Cervero R. , 2001) (Belzer & Autler, 2002) (Dittmar & Ohland, 2003). In essence, **TOD means the creation of denser, mixed use activity nodes connected by high quality**
public transportation. Proponents believe that a combination of design features will induce travel mode shifts that result in reduced area-wide traffic congestion and improved air quality. These features include improved street connectivity, public amenities, and a concentration of residences and jobs in proximity to transit stations and commercial businesses. As an additional benefit, the enhanced pedestrian environment will increase "casual encounters" among neighbors that can contribute to a sense of community.

2. Need of the Study

One of the primary reasons for unpopularity of the concept of TOD is the unavailability of successful implementation theory to be practiced within a region. These lead many organizational bodies to be discouraged from using the concept (Belzer & Autler, 2002).

No universal working definition of transit-oriented development exists. Often, the actors engaged in TOD projects bring different goals to the table, pursue strategies that work at cross-purposes to each other, and lack unifying policy objectives. (Belzer & Autler, 2002)

This lack of clarity in the definition of TOD may exacerbate legitimate disagreements about what constitutes "good" TOD. Should TOD aim to maximize revenue to the transit agency through lucrative ground leases or seek to minimize the use of automobiles? Should TOD be designed to maximize ridership or to help revitalize the station area? Should it try to maximize economic success or urban values? All of these are legitimate but sometimes mutually incompatible goals that may result in policies that work at cross-purposes to one another. And resolving them is made harder by the lack of a settled framework for assessment.

On the other hand, (Belzer & Autler, 2002) further states that the Planners have few guidelines for translating the concept of location efficiency into concrete prescriptions for TOD in different settings. What makes a place has not been codified.

The picture grows even more complicated when planners begin to look beyond retail. Different types of employers and occupations are likely to generate different levels of transit use. What types of employers or real estate types are best suited to being located
near transit? Can the role of a station area as an employment center be reconciled with its role as a neighborhood? What types of employment mesh best with retail? This general problem of information shortfalls is made more acute by the fact that most of the research in these areas does not focus on transit-oriented development specifically. But mixed-use represents less a particular species of mixed-use development than a special case entirely. This therefore, demands for an attempt of identifying a working set of guidelines for the TOD concept.

3. Intention, Scope and Limitations

The study aims on identifying a working set of design framework while identifying successful TOD features for the developers and planners to be used when selecting locations for development as TOD precincts: with the aid of existing literature and case examples. In order to further strengthen the proposed guidelines it is important to apply-and-test for each existing case examples. However, this is not possible due to the limited time period therefore; only three major case examples have been selected. On the other hand, unavailability of case examples of a TOD approach or even a garden city concept in Sri Lanka is another issue which caused for the movement of foreign examples.

It is not the intention of this study to develop a new theory, but to integrate some dispersed concepts together.

4. Method of Study

It is not possible to attempt any working guidelines for Transit Oriented Development without having a clear understanding about the concepts. Therefore, the term Transit Oriented Development should be literally validated together with the concepts and ideologies about its successiveness defined by the experts on the field. Research articles published by universities and government institutions would be used to fulfill this aspect. The primary attempt under this would be to identify characteristics that should exist within a successful TOD as defined by the expertise.

An attempt would then be made to identify and analyze the characteristics with case examples which would provide an approach for some detailed guidelines; i.e. the expected outcome. Data of the case examples will be collected with literature basis and is processed under the key domains of:

- Its previous situation
• Available/Enacted infrastructure and Institutional Framework
• Land Usage Decisions made
• Identified TOD friendly features

The proceedings will be used for its analysis which would further gives out a working set of guidelines.