

PAPER • OPEN ACCESS

Study of the forming elements of utopia city in Medan to create a sustainable city (Case study of Medan Johor District)

To cite this article: S Astari *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **780** 012020

View the [article online](#) for updates and enhancements.

You may also like

- [The concept of sustainability of the urban realm and community as the key feature of the utopia](#)
A Y Fedak and S M Linda

- [Specifics of the Implementation of Architectural and Urban Utopias in the Large Regional Center of Russia \(on the Example of Samara\)](#)
A V Adonina and E A Akhmedova

- [Science Fiction Audiences: Watching Dr Who and Star Trek](#)
Mark Bould, School of English and American Studies, University of Exeter, UK



The Electrochemical Society
Advancing solid state & electrochemical science & technology



249th
ECS Meeting
May 24-28, 2026
Seattle, WA, US
Washington State
Convention Center

Spotlight Your Science

**Submission deadline:
December 5, 2025**

SUBMIT YOUR ABSTRACT

Study of the forming elements of utopia city in Medan to create a sustainable city (Case study of Medan Johor District)

S Astari^{1,*}, N Ginting² and I F Pane²

¹ Postgraduate Student, Master Degree Program of Architecture, Faculty of Engineering, Universitas Sumatera Utara, Padang Bulan, Medan 20155, Indonesia

² Master Degree Program of Architecture, Faculty of Engineering, Universitas Sumatera Utara, Padang Bulan, Medan 20155, Indonesia

*suciastari1@gmail.com

Abstract. Diverse and complex urban problems, both originating from internal and external cities, such as urban poverty, slums, inadequate facilities, and infrastructure and poor environmental quality are always part of the agenda in urban planning. Planners are not only faced with solving urban problems but also mobilizing all elements of the city so that they can support the success of the plans drawn up. In this case utopia city as a planning concept that describes a condition where urban problems can be solved and create an ideal and sustainable city. This utopian idea has inspired urban planners to develop new physical structures that are more detailed to get to a better world. This study aims to find the forming elements of utopia city which can create a better city in Medan with the location of a case study in Medan Johor District. Three main theories form the basis of this research, namely garden city, broad acre city and radiant city. Data collection was conducted using two methods, namely literature review and field observation. The data obtained were analyzed by interpreting existing conditions with the literature to produce findings, conclusions and suggestions from this study. Based on the results of the study it can be concluded that the forming elements of Utopia City have a role in efforts to create an ideal and sustainable city.

1. Introduction

The concept of planning emerged and developed as a reaction to the bad environmental conditions caused by the industrial revolution. This situation inspired the initial idea to create a better and more comfortable residential environment, so that the concept of utopian planning emerged. Utopia was first introduced by Thomas More (1516) as "a future better than the present". The concept of utopia is a detailed planning for the desired world when life is considered [1]. This is a manifestation towards something better and ideal where everyone lives in harmony. Utopian ideas have inspired urban planners to design new physical structures in more detail as a higher level of thinking and a direction towards a better, ideal and sustainable world. In expressing their ideas, utopian planners put the focus of planning on urban design, city park design and settlement design as conceptualized by Ebenezer Howard in Garden City, Frank L. Wright in Broadacre City and Le Corbusier in Radiant City [2].

The Garden City concept puts forward the main idea of natural beauty. The city, which is built on an area of 6,000 hectares, has clear regional functions, namely the Central Park, Crystal Palace, residential areas and public service areas. According to Thomas Karsten in Kesuma the concept of Garden City includes the use of concentric radial patterns; zoning division based on function, technical, economy



Content from this work may be used under the terms of the [Creative Commons Attribution 3.0 licence](https://creativecommons.org/licenses/by/3.0/). Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI.

and health; connecting transportation facilities between regions by using trains; parks and vegetation dominate the environment as a unifying area [3]. The garden city concept that Howard created is an urban planning concept with the main element being the formation of green open space in the form of a green belt with a zoning pattern of land use division and equipped with connecting transportation facilities in the form of a highway and trains.

Broadacre City combines urban settlements by complementing city facilities and infrastructure with a rural atmosphere. Broadacre City all factories, shops, schools, cultural centers and professional buildings will be spread out on a small scale so that they can be reached in all zones. The Broadacre City concept describes a city that is divided into four distinct zones with low population density and lots of green open space that are interconnected with people's homes. The green open space owned by each house is used by residents as agricultural land or as small fields.

Radiant City focuses on the concept of a city with a high population density [4]. The luminous city plan is divided into two districts, namely the business district and the residential district. The business district is located in the city center and contains skyscrapers with a height of about 200 meters which are estimated to accommodate 500 to 800 thousand people and are equipped with an underground transportation system. The residential area will contain an apartment building known as unité with a height of up to 50 meters which can accommodate up to 2,700 residents and function as a vertical village. The built area only covers 15% of the total area of the city where it is lighted so that residents can enjoy the open space provided and have full sun access [5]. Radiant City is planned as a city concept with high population density but abundant open space which is realized by the construction of skyscrapers as the solution. Through the literature review that has been described previously, it is found the elements that make up the utopia city. The following is a summary of the elements that make up a utopia city, which can be seen in Table 1:

Table 1. Utopia city elements.

Utopia City	Reference	Forming Elements	Conclusion
Garden City	Ebenezer Howard (1898)	<ul style="list-style-type: none"> • Greenbelt • Industry • Housing • Public Facilities 	<ul style="list-style-type: none"> • Green Area • Residential Area • Economic Activity
	Savitri (2007)	<ul style="list-style-type: none"> • City Center • Residential Area • Public Service Area 	
	Novi Maulida (2009)	<ul style="list-style-type: none"> • Facilities and Utilities • Zoning 	
	Thomas Karsten (2013)	<ul style="list-style-type: none"> • Green Open Space • Transportation Facilities • Zoning 	
Broadacre City	Frank L Wright (1932) [6]	<ul style="list-style-type: none"> • Physical Activity Area • Cultural Institutions • Industry • Green Area • Housing • Agriculture and Farming 	
	Ella Wise (2013)	Agrarian Lanscape	
	Claire (2018)	Residential Area with Lanscape	
	Emilia (2016)	The Distribution of Buildings in each area on a small scale	

Table 1. Cont.

Radiant City		
Le Corbusier (1930)		<ul style="list-style-type: none"> • Housing • Industry • Green Area • Vertical Building • Center of Trade and Service
Gerald Steyn (2012) [4]		High Density
Marylene Montavon (2006)		<ul style="list-style-type: none"> • High Density • Green Area • Transportation Facilities
Gili Merlin (2013) [5]		<ul style="list-style-type: none"> • High Density • Residential Area • Business area • Vertical Building • Green Area

2. Methods

The research implementation begins with data collection through literature studies related to Utopia City. The results of data obtained through literature study will be the basis for data collection through field observations. Data from field observations will then be analyzed by interpreting the data in Utopia City (theory and literature review) with the conditions in the research area. Determining the research variables begins with conducting a literature review related to the elements that make up the city of utopia. The indicators used by researchers in this study are the conclusions of the indicators obtained through a literature review of the elements that make up the city of Utopia. The variables and indicators used in this study can be seen in Table 2:

Table 2. Utopia city variable.

Variable	Indicator	Parameter	
Green Area	Pedestrian Ways	<ul style="list-style-type: none"> • Availability of Pedestrian Ways • Pedestrian Ways Conditions 	
	Sport Area	<ul style="list-style-type: none"> • Availability of Sport Area • Type of Sports 	
	Vegetation	Type of Vegetation	
Residential Area	Type of Occupancy	<ul style="list-style-type: none"> • Single Residence • Couple Residence • Tread House • Town House • Flats • Shophouse • Rent Room 	
		Road	<ul style="list-style-type: none"> • Availability Road • Pavement
		Facilities and Utilities	<ul style="list-style-type: none"> • Equipped with Drainage • Drainage Conditions
		Drink Water	Equipped with a Drinking Water System
Economic Activity	Type of Economic Activity	<ul style="list-style-type: none"> • Electricity • Equipped with an Electrical System 	
		<ul style="list-style-type: none"> • Offices • Industry • Trade and Services • Mining 	
		Accessibility	<ul style="list-style-type: none"> • Easy to Reach or Traversed by Public Transportation • Strategic Location
		Parking Area	<ul style="list-style-type: none"> • Availability of Parking Area

3. Results and discussions

Based on data from observations made through field observations and literature studies related to urban utopia elements in the study area, this chapter will discuss the data analysis.

3.1. Utopia city concept study

Medan Johor sub-district has the characteristics of a utopian city with a garden city. This is evidenced by the interaction between the core city and the sub-urban area. This incident is an implication of Medan Johor's position as an area on the edge of the core city (Medan), with the expansion of the core city area and the development of residential centers in Tuntungan, Pancur Batu, Namo Rambe and Delitua, the interaction of the two has also increased [7], can be seen in Figure 1. This was the same as the situation in Garden City. Howard designed the park town to be a self-contained city and when it reached the high population, another park town would develop around it. Howard envisioned a group of park towns as a downtown satellite linked by road and rail (Figure 2).

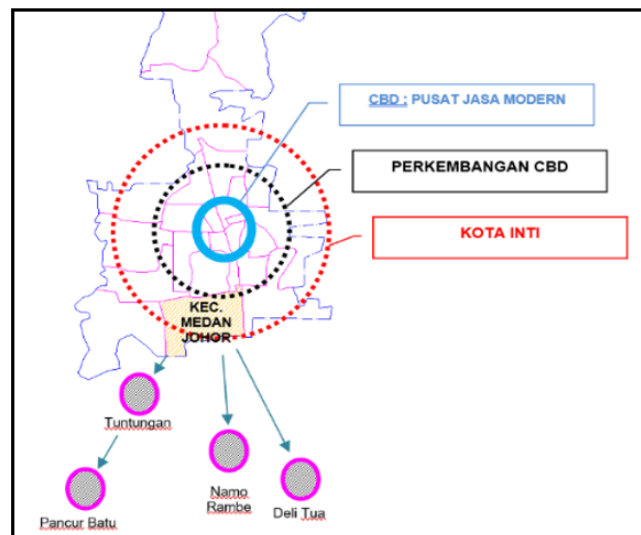


Figure 1. Interaction model between cities and sub-urban.

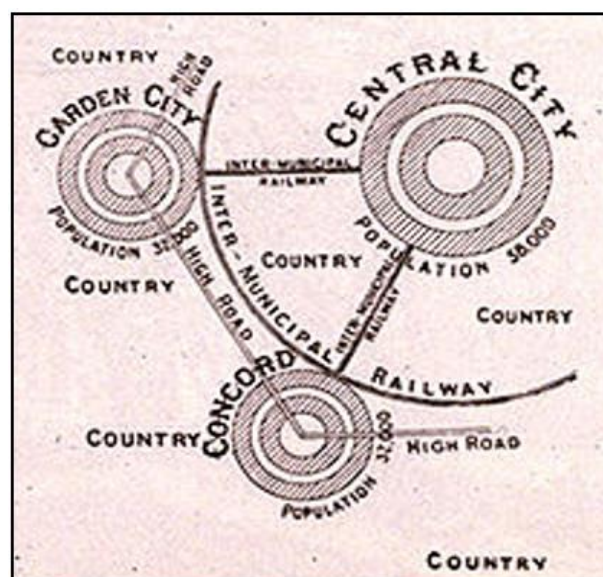


Figure 2. Garden city's growth.

3.2. Green area element study

Based on field observations, the green area in the research location is scattered at several points with locations that are always in the vicinity of residential areas. This shows the similarity of the concept of placing green areas with the utopian designs that exist in garden cities, large cities and light cities where green open spaces are always located around residential areas. This is intended so that residents can enjoy RTH directly and RTH can function optimally.

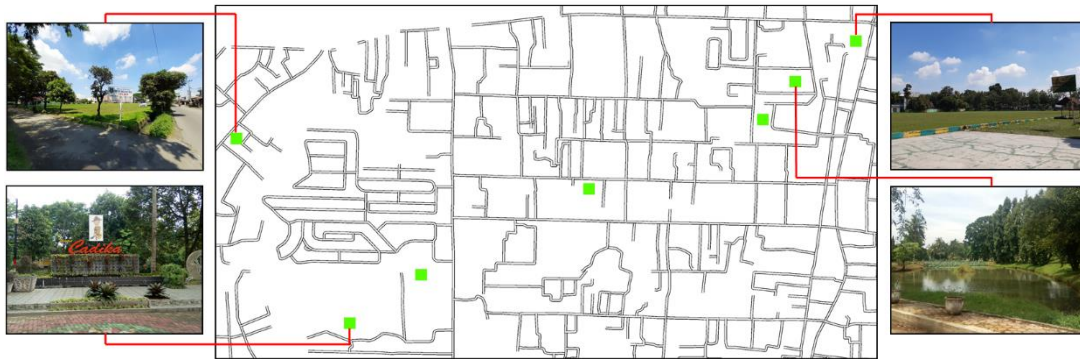


Figure 3. Distribution of green areas.

3.3. Residential area element study

Based on field observations, in residential areas there are several types of houses such as duplex houses, single houses, shophouses and tenements. In residential areas there are several different building functions. Placement of the building is positioned according to its function. Buildings that function commercially are located in front of a housing complex, while buildings that function as housing are located within a residential complex. This zoning system is also used in the concept of a utopian city. Not only Howard but Le Corbusier and Wright also used a zoning system in their city concept. This division of territory aims to take advantage of space and create a development order. There are residential areas that have used underground utility systems. In this residential area, there are no more cables or electric poles around the roads and gutters. For more details, see Figure 8. This situation has been described by Wright in his sketch made in 1985. Wright describes the condition of a city with light where the roads are landscaped and there are no billboards and telephone poles and all utility lines are underground. This can be seen in J City Housing which is located in the research location.

3.4. Economic activities elements study

The economic activity that grows along the main road of the study area proves that, as initiated by Le Corbusier, the business district can be seen from the modern terrace cafe. Along the main road there are lots of cafes, some of which use a cafe terrace as an atmosphere that can attract visitors to come to the cafe. The urban system in Medan Johor Subdistrict is developed interconnected with the level of city function as a service center, to serve the development of various service businesses and production activities both for the region and for the surrounding area. This is supported by the level of availability of adequate city infrastructure and facilities so as to provide benefits, namely increasing cross-sector development, especially in the economic sector as well as increasing income and community welfare.



Figure 4. Distribution of residential area.

The types of economic activity in the research location consist of office, trade and service activities. Based on field observations, the researcher divided the locations of economic activity into two locations. The first was along Jl. AH Nasution consists of 29 trading activities; 9 private / government offices and 15 services. The second location is located on Jl. Karya Wisata consists of 128 trades; 37 services and 1 office building. Jl. AH Nasution which is a road crossing Sumatra and Jl. Karya Wisata which has a high level of interaction makes this location strategic. This is in line with Wright's opinion "The big highway will connect the service centers, commerce and offices scattered (1932)".

Economic activities in the study area have easy access and are traversed by public transport because generally economic activities are spread out on main roads that have high movement intensity. Ease of accessibility in the study area is also supported by the function of the main road, which is the highway of Sumatra, so that the level of movement and interaction that occurs in this area is quite high. This is also supported by the large number of government offices / agencies at the city and provincial levels in this region.

The parking facility is a location that is used as a temporary stop for vehicles for a certain period of time. Not only easy accessibility to public transportation facilities, but parking is also a major concern in locations for economic activity in order to create a safe and comfortable atmosphere for visitors and workers. The same thing was expressed by Le Corbusier in the city concept that educational institutions as well as sports facilities and parking areas in the scheme are also very important factors such as overcoming transportation problems and providing sufficient space for people to feel free.



Figure 5. Distribution of economic activity.

4. Conclusion

Based on the research results, it can be concluded that there is a relationship between urban planning and the utopia city theory. From the planning concept to the characteristics of a garden city. This condition is evidenced by the interaction between the core city and the sub-urban area. This situation is an implication of the position of the research location (Medan Johor) as an area located on the edge of the core city (Medan), with the enlargement of the size of the core city and the development of settlement centers in Tuntungan, Pancur Batu, Namo Rambe and Delitua so that the interaction in between the two. From the road pattern that follows the road pattern of radiant city and broadacre city where the road pattern is with a system of angled or grid patterns where the parts of the city are divided into rectangular blocks with parallel roads so that the shape of the road inside becomes perpendicular to one another. Green area elements that follow the three concepts of utopia where the spread of green areas around settlements. The residential area element refers to the concept of a broadacre city where there is an underground utility system and a zoning system that follows the three utopian concepts in dividing the location of the building according to its function. The elements of economic activity that develop along the main road indicate the role of the broadacre city concept.

References

- [1] Parker M 2002 Utopia and the organizational imagination: outopia *Sociol. Rev.* **50** 1–8
- [2] Fishman R 1982 *Urban utopias in the twentieth century: Ebenezer Howard, Frank lloyd wright, and Le Corbusier* (MIT Press)

- [3] Yunita Kesuma S T and Prayitno I B 2013 Karakter Visual Kawasan Kotabaru, Yogyakarta Berdasarkan Konsep Garden City
- [4] Steyn G 2012 Le Corbusier's town-planning ideas and the ideas of history *South African J. Art Hist.* **27** 83–106
- [5] Merin G 2013 AD Classics: Ville Radieuse/Le Corbusier *ArchDaily, January* **10**
- [6] Stankiewicz E 2015 Frank Lloyd Wright's Broadacre City as a manifestation of American values of freedom and democracy *Crossroads. A J. English Stud.* 26–36
- [7] Anon *RDTR Kecamatan Medan Johor*