

## The Issue of Strategic Sustainable Development of Depok City

Alimuddin<sup>1</sup>, Yudith Vega Paramitadevi<sup>2</sup>

**Corresponding author:**

<sup>1</sup>Civil Engineering Study Program, Faculty of Civil Engineering and Science, Ibn Khaldun University  
Sholeh Iskandar Street, RT.01/RW.10, Kedungbadak, Tanah Sareal District, Bogor City, West Java 16162  
phone: (+62) 852-5594-2801

e-mail: [alimuddin.sil12@gmail.com](mailto:alimuddin.sil12@gmail.com)

<sup>2</sup>Engineering and Environmental Management Study Program, Vocational School of IPB University  
Kumbang Street, No.14, RT.02/RW.06, Babakan, Bogor Tengah District, Bogor City, West Java 16128

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### ABSTRACT

Sustainable development is a process of development (land, city, business, community, etc.) that has the principle of "meet the needs of the present without sacrificing the fulfillment of the needs of future generations". One of the factors that must be faced to achieve sustainable development is how to improve environmental destruction without compromising the needs of economic development and social justice. Administratively, Depok city is flanked by the cities of Jakarta and Bogor, where causing Depok to become a very strategic area. The impact is that Depok growing rapidly over time. The purpose of this study is to analyze the issue of sustainable development in Depok city. This research used Focus Group Discussion (FGD) method and system dynamics model. The result of this study is that the 39 sustainable development issues are grouped based on sector similarities and themes to 9 sustainable development netted issues. This research is expected to be one of the considerations for decision-making to conduct sustainable development in Depok.

### KEYWORDS

Sustainable Development Issues, FGD, System Dynamics, Depok City

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## Introduction

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Sustainable development is first is a capacity in maintaining ecological, social, and economic stability in the transformation of biosecurity services to humans, secondly meeting and optimizing the needs of current and future generations, third persistence over the necessary and desired systems (socio-political or natural) indefinitely, the fourth integration of ethical, economic, social and environmental aspects in a coherent manner so that generations of humans and other living beings can live in the future without limits, the fifth meet the needs and aspirations under environmental, social and technological limiting factors, the sixth lives in harmony with nature and the other and the seventh maintains the quality of the relationship between man and nature [1].

The International Union for Conservation of Nature and Natural Resources (IUCN) (1980) in the World Conservation Strategy defines that the implementation of development must take into account environmental, social, and economic factors based on life resources and consider the long-term and short-term benefits or losses of an alternative action [2]. Meanwhile, the Food and Agriculture Organization (1995) means that sustainable development is the preservation and management of natural resources aimed at ensuring the sustainability of the needs of current and future generations. The development of elevations such as soil, water, plants, and genetic resources does not cause environmental degradation, using appropriate technology, and is socially and economically acceptable [3].

Law of the Republic of Indonesia No. 32 of 2009 concerning Environmental Protection and Management, sustainable development is defined as a conscious and planned effort that combines environmental, social, and economic aspects into development strategies to ensure the integrity of the environment as well as the safety, capability, well-being, and quality of life of current and future generations. Based on the above understandings, the development paradigm that originally focused on economic considerations simply shifted to the paradigm of development with the environmental and social sectors as sectors that could not be abandoned [4].

The principles of sustainable development include 1. Equality and social justice. This first principle means that the development process must still ensure the equalization of natural resources and land for current and future generations. Development must also ensure the welfare of all levels of society; 2. Appreciate diversity. Biodiversity and cultural diversity need to be maintained in ensuring sustainability. Biodiversity is related to the sustainability of natural resources, while cultural diversity is related to the equal treatment of each person; 3. Using an integrative approach. Sustainable development prioritizes the relationship between people and nature. Where man and nature are elements that cannot stand on their own; 4. Long-term perspective, in this case, sustainable development-oriented not only the present but the future. To ensure future generations get the same or even better environmental conditions [5].

Over time, Depok city will continue to develop by conducting sustainable development in various sectors that are committed to economic, social, and environmental development. Therefore, the purpose of this study is to analyze the issue of sustainable development in Depok. The results of this study are expected to be one of the considerations for decision-making to conduct sustainable development in Depok.

## Method

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This study used interviews through Focus Group Discussion (FGD) involving various stakeholders including government agencies (Environment Agency, Housing and Settlements Office, Fisheries and Marine Service, Public Works Office, and other agencies related to spatial planning and system dynamics models. FGD method is carried out by the initial issue or the issue presented following the existing circumstance of Depok city based on the facts. Then continued with a meta plan to capture additional issues related to sustainable development. From the FGD it will be identified the issue of strategic sustainable development in form of a long list. Issues on each aspect are grouped into themes according to the suitability and similarity of sectors, causes, influences, and others. System dynamics models can provide more reliable estimates than statistical models, system dynamics models provide a way to understand the causes of industrial behavior, detect against early changes in industrial structure and determine factors that predict significantly and sensitively [6].

## Results and Discussion

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### **Scoping List of Strategic Sustainable Development Issues**

Based on the FGD conducted, 39 strategic sustainable development issues were identified in the form of a long list presented in the following table.

Table 1. List of Sustainable Development Issues

No.	Issue Type	List of Sustainable Development Issues
1	Changes in land function and reduced biodiversity	1. The transfer of the function of open land into a built-up area 2. Increased population resulting in minimal RTH 3. Reduced number of water sources due to land transfer 4. Local plants are rarely found 5. Lack of public awareness in sorting and reducing waste 6. Lack of means of transportation and waste processing
2	Waste management is not optimal	7. Lack of TPS and UPS procurement in each region 8. The existence of waste dumped into the Depok area from the community outside Depok 9. Lack of waste processing technology 10. Landfill land limited 11. Lack of public and business awareness of the importance of infiltration wells and biopores
3	Vulnerability of the region to floods and landslides	12. Setu Normalization 13. Widening of Pesanggrahan River bridge 14. Lack of drainage channels 15. Normalization of the river 16. There are still landslide-prone spots near the settlement 17. Reduced RTH at landslide-prone points 18. High number of vehicle growth
4	Increased congestion	19. Inadequate road capacity 20. Lack of regular public transportation services when stopping 21. Lack of available parking space 22. High vehicle growth
5	Decreased air quality	23. Low compliance of businesses in air quality management 24. Lack of awareness of businesses in the provision of RTH and Greening 25. Lack of air quality monitoring facilities 26. Communities and businesses still use groundwater 27. Lack of drinking water service facilities
6	Decrease in water quality and quantity	28. There is a decrease in water capacity in Setu and Rivers both from household and industrial waste 29. Not optimal awareness of environmental monitoring of businesses 30. There are still slums
7	Decrease in environmental sanitation and lack of sanitation facilities	31. Lack of optimal management in slums 32. The existence of illegal buildings 33. Lack of environmental sanitation facilities and infrastructure 34. The low level of public awareness to implement a Clean and Healthy Life Behavior
8	Increasing need for public facilities	35. Lack of public facilities available 36. Inadequate social facilities 37. Slow rate of economic growth
9	Regional competitiveness and creative economy are not yet optimal	38. Regional investment in development has not been optimal in absorbing local labor 39. The informal business sector is less organized

Source: Focus Group Discussion on Sustainable Development Issues in Depok City, 2020

These 39 sustainable development issues were grouped by sector similarity, the themes of issues netted through FGD and causal relationships became 9 issues of sustainable development.

### 1. Changes in land function and reduced biodiversity

According to the Regulation of the Minister of Home Affairs of the Republic of Indonesia No. 18 of 2017 concerning The Area and Boundaries of Depok City, Depok City has an area of 19,998.48 ha with the cover of Depok city land is categorized into 2 classifications of land, namely Protected Areas (12%) and Cultivation

Area (88%). Depok city has 25 setu / lake which is a local protected area (protected area) that is used as a water catchment area. In addition, Depok city has a Forest Park (Tahura) Pancoran Mas with an area of 7.2 ha which can also be used as a water catchment area. Besides Tahura, Depok city also has a city park in the University of Indonesia Education Area that can be used as a water catchment area [7].

Green Open Space (RTH) plan area of 1058.84 ha or 5.29% of the total space pattern plan. According to the Change Plan Bappeda Depok CITY TA 2016-2021, there is at least a public RTH covering an area of 4059.69 ha or 20.30% of the city area. In particular, the RTH area in 2006 and 2011 (Table 2) [8]. according to the analysis of the Depok Open Space Map conducted by Setyani et al (2017) decreased by 809.67 ha in just 5 years. The needs of RTH Depok based on the population in 2011 amounted to 3627.23 ha and based on the area of Depok city of 4005.8 ha. This shows that the needs of RTH both based on population and area in Depok are insufficient. According to Setyani, et al (2017), factors that influenced the decrease in the area of RTH is due to, among others, an increase in the population, so that the RTH that was previously open to be used for the construction of housing/land was built for industrial and commercial areas [9].

#### a. The linkage of decreasing green open space with conversion of land use functions

Based on the Environmental Risk Analysis Document of Depok City (2020), the transfer of land use function in Depok city is caused by [10]:

- 1) Economic considerations (variable income level, number of family dependents, speed of income generation, existence of investors).
- 2) The national Planning Policy / Province / City of Depok.
- 3) Lack of land use control (control of licensing application / IMB).
- 4) Physical reduction of vacant land that can change function.

Land use for development in Depok shows a tendency to increase rapidly in the last 5 years. The largest dominance of land use is for settlements with an average utilization rate of 125 hectares per year. Land use for the development of other sectors is also open with the ratification of the Regional Regulation (Perda) Spatial Plan (RTRW) 2012-2032.

The ranking of priorities for handling land function in Depok (Table 2) according to the broad study in Environmental Risk Analysis (2020) is Cipayung and Limo Subdistricts. Cipayung sub-district is a priority because it is extensive, while the land function transfer in Limo Subdistrict is relatively high. Other sub-districts are heading for stagnation as space control improves, IMB licensing is selective, and land prices are very high within the framework of the property business market segment in Depok City.

Table 2. Rating of Priority for Management of Land Function Transfer Risk

District	2013 Ha	2018 Ha	Percentage %	Total conversion of paddy fields to be developed (2013 + 2018) Ha	Ranking/ Priority
Sawangan	90	49	-45,6	139	3
Bojongsari	22	1	-95,5	23	5
Pancoran Mas	3	0	0	3	7
Cipayung	3	7	133,3	10	1*)
Sukamaju	0	0	0	0	-
Cilodong	2	2	0	4	6
Cimanggis	0	0	0	0	-
Tapos	78	70	-10,3	148	4
Beji	0	0	0	0	-
Limo	143	28	-80,4	171	2
Cinere	3	0	-100	3	7
<b>Kota Depok</b>	<b>362</b>	<b>157</b>	<b>-56,6</b>	<b>519</b>	<b>-</b>

Source: Environmental Risk Analysis Document (2020)

#### b. Linkage of Land Function with Housing Support and Availability

The carrying capacity and capacity of the ecosystem services availability of housing or living space has also fluctuated over the last 5 years. Changes in the availability of housing or living space are influenced by changes in land function in Depok, especially changes in non-vegetation land cover and vegetation cover. Areas that experience increased green cover and surface water will experience a decrease in the availability of housing or living space and vice versa.

Based on the results of the analysis in the Document of Study and Mapping of The Carrying Capacity and Capacity of the Environment of Depok City (2019), it can be known that the total area of Depok city has increased by 1122.2 ha, the total area that has decreased is an area of 381.21 ha, and the area that remains is an area of 19,436 ha. The highest sub-district to experience an increase is Tapos Subdistrict covering an area of 417.29 ha, while the highest sub-district has decreased is Tapos Subdistrict covering an area of 150.91 ha. The greater the area of land that is converted, the greater the risk of climate change, reduced food security, and local flooding because the area is built up lower than drainage channels [11].

**c. The Linkage of Green Open Space to Climate Change**

Calculation of distribution and extent of ecosystem services (in which there is RTH) to climate regulation resulted in a very high class of 1768.11 ha, a high class of 1998.82 ha, a medium class of 269.92 ha, a low class of 14907.88 ha, and a very low class of 1032.48 ha.

In particular, the sub-district that still has the highest class is Tapos Subdistrict which is 545.72 Ha. The district that has the largest high class is Sawangan Subdistrict which is 580.64 Ha. The sub-district that has the most widespread medium class is Cipayung Subdistrict which is 129.84 Ha. The district that has the most widespread low class is Tapos Subdistrict which is 2201.71 Ha. The district with the lowest class is Cimanggis district which is 202.57 ha. It can be concluded that ecosystem services or Green Open Space in Tapos and Cimanggis sub-districts play an important role in microclimate regulation in Depok, while in 6 other sub-districts (54.54%) less functional in such microclimate arrangements.

Based on Ramadhan and Only research (2019), Depok City has a Temperature Humidity Index (comfort level) of each - each land use is a City Forest Area has a THI of 26.99 °C falls into the category of comfortable, The City Park Area has a THI of 27.83 °C falls into the uncomfortable category and area Kawasan wake up has a THI of 28.61 °C falls into the uncomfortable category. Thus the decline of RTH affects the decline of the microclimate, one of the determinants in climate change [12].

The relationship between the parameters for reducing green open space with climate change is presented in the following figure 1.

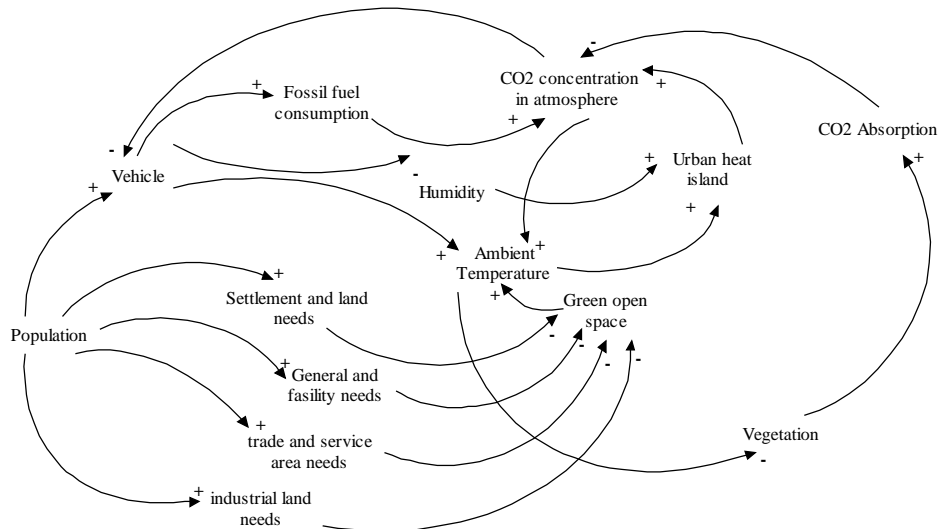


Fig 1. Causal loop diagram of the reduction in green open space with climate change

**2. Waste management is not optimal**

In general, the problem of waste in Depok is insufficient garbage collection, long and late garbage collection time, and the absence of local processing for waste. According to the Strategic Book of Urban Sanitation (SSK) Depok (2015), some of the problems contained in waste management in Depok are [13]:

- 1) Still low knowledge of the community at the family level in the sorting of garbage.
- 2) Disorderly behavior in disposing of waste in the place
- 3) The volume of waste produced each year continues to increase
- 4) There has been no application of technology that can significantly reduce waste piles in landfills
- 5) Not yet integrated paradigm in waste management.

Depok city has an existing landfill that is Cipayung landfill whose capacity is not sufficient for the needs of waste disposal land. This will be a strategic problem for Depok if not addressed immediately. The domestic waste management status of Depok city in 2015 shows that the amount of waste produced per day is 1622 m3. The number of Waste Processing Units (UPS) as many as 27 units to serve 11 sub-districts, with Cipayung Subdistrict has the largest number of UPS. The weakness of Depok city in managing its waste is the application of waste sorting that has not been carried out properly, hopefully in 2019 the scope of waste services has reached 90%. The service coverage still has not met the target because of the limitations of the implementation of the 3R system and so on.

The relationship between the parameters in the optimal management of domestic waste and waste systems can be seen in the following figure 2.

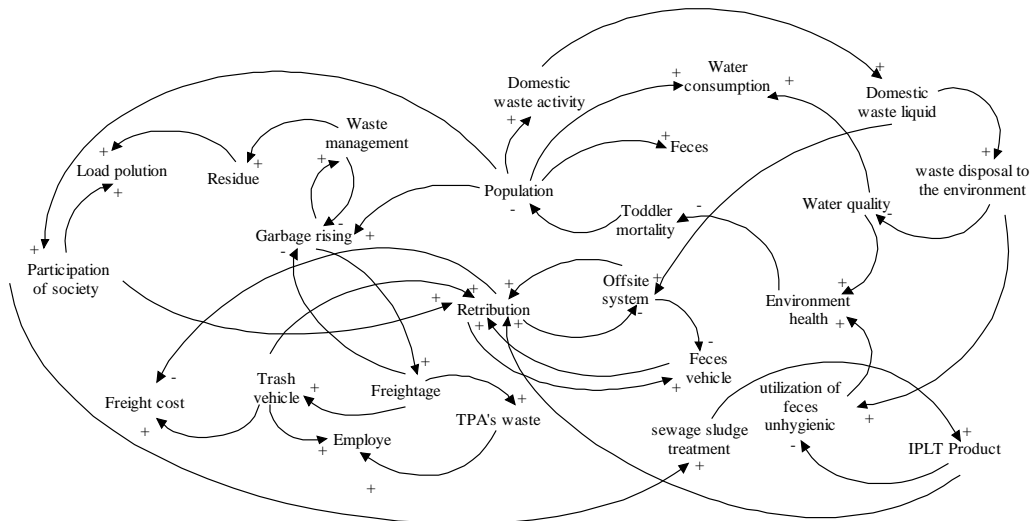


Fig 2. Causal Loop Diagram of Interrelationship Has Not Been Optimal for Domestic Waste Management and Waste System In Depok City

**3. Vulnerability of the region to floods and landslides**

Based on the Document on The Preparation of The Master Plan drainse Depok City, the problem of flooding in depok is caused by [14]:

- 1) The low discipline of Depok people who tend to throw garbage in the channel / times / river / there.
- 2) The number of land/land functions due to the high demand of the community for housing/settlements and places of economic activity (shophouses, offices, warehouses, and factories)
- 3) The number of infiltrations/occupancy of the community to the border land and channel bodies / times / rivers / situ
- 4) Reduced forest areas in upstream areas (Bogor Peak and Sukabumi Regency)
- 5) Planning channels that are partial/local without regard to upstream/downstream.

Potential flood areas in Depok are presented in the following Table 3.

Table 3. Potential Flood Areas in Depok City

No	District	Flood Hazard Level	Flood Inundation Area (Km <sup>2</sup> )
1	Beji	Flood Prone	1,15
		Moderat	8,15
		Not Flood Prone	5,28
2	Bojongsari	Flood Prone	0,88
		Moderat	6,33
		Not Flood Prone	12,12
3	Cilodong	Flood Prone	0,09
		Moderat	1,39
4	Cimanggis	Not Flood Prone	14,77
		Flood Prone	1,94
		Moderat	11,61

No	District	Flood Hazard Level	Flood Inundation Area (Km <sup>2</sup> )
5	Cinere	Not Flood Prone	8,13
		Flood Prone	1,27
		Moderat	6,63
6	Cipayung	Not Flood Prone	2,66
		Flood Prone	0,11
		Moderat	1,84
7	Pancoran Mas	Not Flood Prone	9,60
		Flood Prone	0,92
		Moderat	6,40
8	Limo	Not Flood Prone	10,77
		Flood Prone	0,79
		Moderat	5,47
9	Sawangan	Not Flood Prone	5,61
		Flood Prone	0,76
		Moderat	5,59
10	Sukmajaya	Not Flood Prone	19,94
		Flood Prone	0,68
		Moderat	6,38
11	Tapos	Not Flood Prone	10,41
		Flood Prone	0,20
		Moderat	2,60
		Not Flood Prone	31,24

Source: Environmental Risk Analysis Document (2020)

#### a. Linkage of Increased Flood Incidents with Garbage

Based on the Environmental Risk Analysis Document (2020), the occurrence of waste is one of the main aspects that are high risk to the environment in Depok. In general, the problem of waste in Depok is insufficient garbage collection, long and late garbage collection time, and the absence of local processing for waste. Predictions of the amount of waste in 2039 are presented in the following Table 4.

Table 4. Prediction of The Amount of Waste Generation In 2039

District	Total population	Domestic Waste Generation (3 L/Ppl/day)	Non Domestik (0,6 L/ppl/day)	Total (m <sup>3</sup> )
Sawangan	330.569	991.708	198.342	1.745
Bojongsari	266.805	800.415	160.083	1.409
Pancoran Mas	563.154	1.689.462	337.892	2.973
Cipayung	342.197	1.026.591	205.318	1.807
Sukmajaya	621.456	1.864.368	372.874	3.281
Cilodong	334.429	1.003.288	200.658	1.766
Cimanggis	647.330	1.941.989	388.398	3.418
Tapos	578.406	1.735.218	347.044	3.054
Beji	443.814	1.331.442	266.288	2.343
Limo	235.287	705.861	141.172	1.242
Cinere	287.474	862.421	172.484	1.518
<b>Jumlah</b>	<b>4.650.922</b>	<b>13.952.765</b>	<b>2.790.553</b>	<b>24.557</b>

Source: analysis results

**b. Linkage of Increased Flood Incidence with Environmental Supporting Capacity of Ecosystem Services**

In general, the area of ecosystem services regulating water flow and floods with a very high class is 164.33 ha, high class is 3,938.53 ha, medium class is 14,860.85 ha, low class is 1,013.50 ha, and very low class is 0 ha. In particular, the sub-districts that still have the widest very high class are Cimanggis District, namely 27.34 ha. The sub-district that has the widest high class is Tapos District, which is 981.91 ha. The sub-district that has the widest medium class is Tapos District, namely 2,192.15 ha. The sub-district that has the widest low class is Cimanggis District, which is 201.40 ha. The districts with the widest very low class were none. The conditions of the carrying capacity and carrying capacity of ecosystem services regulating water flow and flooding are presented in the following figure. The distribution and extent of ecosystem services regulating water flow and flooding are presented in the following table.

Table 5. Distribution and Area of Ecosystem Services Regulating Water Flow and Flood

No	Districts	Very low	Low	Moderat	High	Very high	Total
1	Beji		40,48	1.037,97	381,27	16,75	1.476,46
2	Bojongsari		34,61	1.548,81	348,16	5,67	1.937,25
3	Cilodong		38,98	1.417,87	86,27	12,42	1.555,54
4	Cimanggis		201,40	1.420,97	509,27	27,34	2.158,97
5	Cinere		112,85	714,11	216,69	4,23	1.047,88
6	Cipayung		33,61	912,23	129,84	16,92	1.092,61
7	Limo		69,67	807,62	311,75	0,49	1.189,54
8	Pancoran Mas		154,47	1.550,80	58,96	23,33	1.787,56
9	Sawangan		35,64	1.849,54	748,08	18,24	2.651,49
10	Sukma Jaya		143,46	1.408,78	166,32	12,15	1.730,70
11	Tapos		148,34	2.192,15	981,91	26,81	3.349,22
<b>Kota Depok</b>			<b>1.013,50</b>	<b>14.860,85</b>	<b>3.938,53</b>	<b>164,33</b>	<b>19.977,21</b>

Source: Final Report of Study and Mapping of Environmental Support and Capacity Based on Ecosystem Services in Depok City

The potential landslide areas in Depok City are presented in the following figure.

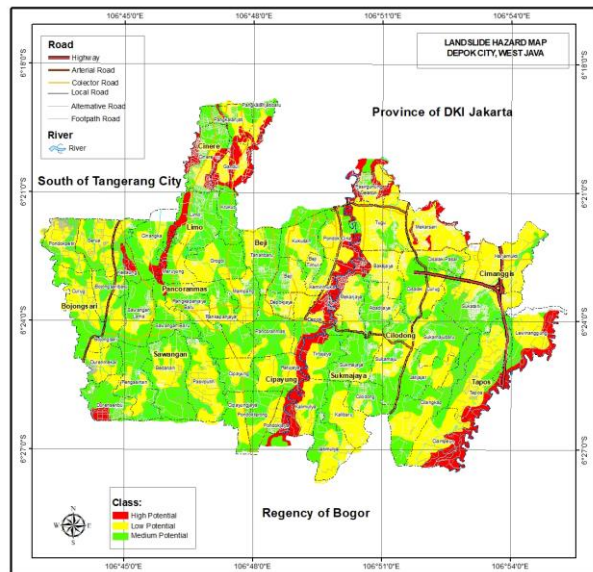


Fig 3. Landslide Potential Map in Depok City

The potential for landslides in Depok City is divided into 3 (three) landslide categories, namely the low landslide potential category, the medium landslide potential category, and the high landslide potential category. Areas with a high landslide potential category are Bakti Jaya Village, Sukma Jaya District with an area of 648 ha, followed by Ciampeun Village, Tapos District with an area of 436 ha, and Pangkalanjati Village. Kecamatan Cinere Subdistrict with an area of 285 ha while the area with a low category is Tugu

Village, Cimanggis District with an area of 43 ha, followed by Gandul Village, Cinere District with an area of 50 ha, and Rangkap Jaya Baru Village, Pancoran Mas District with an area of 60 Ha.

#### 4. Increased congestion

In general, the average city road performance is at levels C, D, E, which means that the service level is in moderate to high traffic density conditions. Even on a protocol road such as the Margonda section, it is in level E, which is a high traffic density due to internal obstacles (side obstacles and lots of shops so that many cars reduce speed to stop at shops that have limited parking space on average. It does not rule out the 20-year prediction. In the future, road network service performance will reach level F, if traffic engineering is not carried out the level of service is a measure of the performance of a road section or road intersection calculated based on the level of road use, speed, density, and obstacles that occur in Depok City it is at the Intersection with Service Level E with a  $V / C$  Scope limit between 0.85 - 1.00. This indicates that the Traffic Volume is approaching an unstable flow capacity, sometimes stopping.

Along with the development of Depok City, it is hoped that Depok City can become a service center system for activities whose development plans consist of City Service Center (PPK), City Service Sub-Center (SPK), Environmental Center (PL). It is hoped that the division of the sub-centers of the city is expected to spread out the orientation of the community's destination places and create a balanced development between the sub-centers of Depok City, but in reality, the main activity centers in the Margonda area still attract quite a lot of movement towards this area. Although the sub-centers of urban activities surrounding Margonda have been directed, all activity centers are still centered in Margonda. This automatically makes the movement pattern of the city still stuck in the Margonda corridor and the roadways that connect Margonda with the suburban area of Depok City. The impact of this development has caused traffic jams due to fixed road sections and reduced water infiltration. The main factor causing congestion in Depok City is the unbalanced road capacity with the increase in the number of motorized vehicles.

#### 5. Decreased air quality

In general, air quality in Depok City based on 2018 data for parameters  $PM_{10}$ ,  $PM_{2.5}$ ,  $SO_2$ ,  $CO$ ,  $O_3$ , Particulate, and Pb still meet quality standards based on Government Regulation No. 41 of 1999 concerning Air Pollution Control. Factory operation is one of the activities that can cause a decrease in air quality in Depok City where the combustion process which produces large quantities of goods will produce toxic fumes that are released into the air. The results of the Air Quality Index in Depok City from 2017 to 2018 show a value of 73.82 - 62.07. Based on the range of the Air Pollution Standard Index based on KEP-45 / MENLH / 1997 concerning the Air Pollution Standard Index (51-100) it is included in the medium category, meaning that the level of air quality does not affect human or animal health but affects sensitive plants and aesthetic values. The aforementioned conditions show that the Depok City Government has now succeeded in overcoming air pollution that we can feel in previous years, either through several actions, policies, and regulations.

Air pollution if not properly managed will have an impact on human health such as respiratory problems because oxygen is contaminated by dangerous compounds and can harm the environment, such as triggering acid rain, where acid rain can damage plants and lead to global warming so it is needed. prevention and control of air pollution resulting from factory operations such as utilizing environmentally friendly alternative energy, such as solar power and biogas, creating green lines, especially around the factory area, and changing residents close to the factory area so that polluted air can be absorbed through the photosynthesis process, and reduce the use of fossil fuels in the operational process of the plant to reduce pollutants released into the atmosphere.

In 2018, it can be seen that the development of environmental compliance and testing of ambient air quality, including those sourced from factory operational activities, Depok city only has 1 ISPU measuring device which is assistance from the province of West Java.

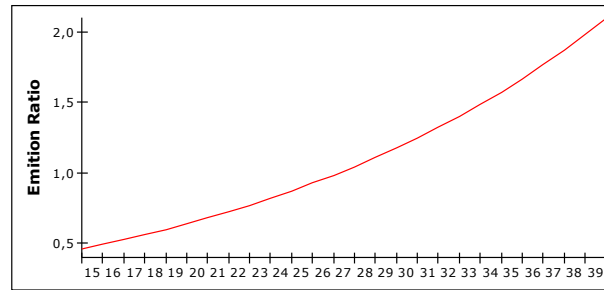


Fig 3. Emission Prediction in Depok City

**a. The Relationship of Decreasing Air Quality with the Environmental Supporting Capacity of Ecosystem Services in Air Quality Maintenance Arrangements**

In general, the area of ecosystem services regulating air quality maintenance with a very high class is 2,187.62 ha, high class is 3,533.67 ha, medium class is 944.20 ha, low class is 13,144.09 ha, and very low class is 167.63. Ha. In particular, the sub-districts that still had the widest very high class were Sawangan District, namely 580.64 ha. The sub-district that has the widest high class is Bojongsari Subdistrict, namely 710.66 ha. The sub-district that has the widest medium class is Cimanggis District, which is 184.80 ha. The sub-district that has the widest low class is Tapos District, namely 1,777.80 ha. The sub-district with the widest very low class was Tapos District, namely 42.96 ha.

**6. Decrease in water quality and quantity**

Community activities and activities are a source of pressure on water quality, including domestic and industrial wastewater. Wastewater according to Metchalf and Eddy (2003) is a combination of liquids and liquid wastes, one of which comes from industry or factories. However, Depok is not a large factory area. However, changing land use into a factory area can affect water quality in Depok City [15].

There are two sources of surface water in Depok City, namely there are 25 lakes and 6 large rivers that cross the Depok City area which is part of SWS Ciliwung, including the Ciliwung River, Angke River, Cipinang River, Sugutamu River, Pesangrahan River, and Krukut River as well as several small rivers which are tributaries and irrigation channels. Rivers in Depok City are included in two Large River Basin Units (SWS), namely the Ciliwung and Cisadane Rivers. These two rivers are used as a source of raw water for the Tirta Asasta Regional Drinking Water Company. The diagram of the loop area of the carrying capacity and water carrying capacity of Depok City is presented in the following Figure 4.

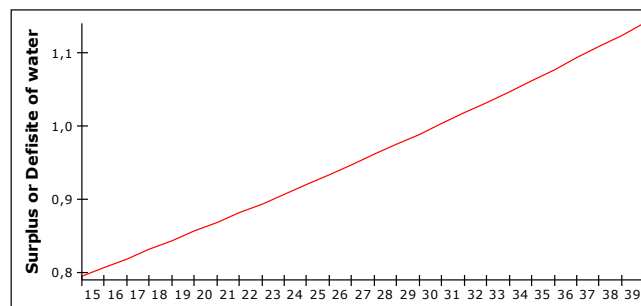


Fig 4. Carrying Capacity and Water Capacity of Depok City

Based on the results of monitoring by the Department of Environment and Sanitation of the City of Depok on river water quality parameters (physical, chemical, and biological parameters) in Depok City in 2018, the results show that several parameters exceed the quality standards of the Government of the Republic of Indonesia Regulation Number 82 of 2001 Class 3 River Water, namely DO, BOD, NO<sub>2</sub>, Free Chlorine. The results of monitoring in the previous year, 2015, 2016, and 2017 the parameters of Fecal Coliform and Total Coliform also exceeded the quality standard, but in the results of monitoring in 2018, the parameters of Total Coliform and Fecal Coliform had met the quality standard, which was below 10,000 / 100 ml for the total

coliform parameter and below 2,000 / 100 ml for fecal coliform parameters at 52 monitoring sampling points. The high BOD is caused by both organic and industrial operations.

Based on the results of in-situ monitoring in Depok City in 2018, it can be seen that the cause of this condition is mostly due to the activities of the surrounding community, such as disposing of domestic waste around the banks of the there, degrading the water into slum housing (land-use change). on the bank there. You can even find the activities of several industries in the vicinity, such as in Situ Tipar, Situ Asih Pulo, and so on. In general, the presence of factories around the sites causes a buildup of liquid and solid waste which is the result of their activities, which in turn can result in loss of the site due to silting due to sedimentation.

### 7. Decrease in environmental sanitation and lack of sanitation facilities

Ecosystems provide positive benefits for humans, especially space to live and live in prosperity. This living space is supported by the ability and high land suitability so that it provides life support both socially, economically, and culturally. Ecosystem services as a place to live and live socially are strongly influenced by physical and geographic environmental conditions as well as opportunities for greater regional development. There are ecoregions in Depok City that can provide benefits in the form of a place to live and live space. In general, in Depok City, land that can be used for housing and living space can be divided into land with high, medium, and low potential. Land that has high potential as a residence and living space in Depok City has an area of 16,874 hectares or about 85.05% of the total land in Depok City.

The sub-district that has the largest percentage of potential land is the Cinere District with a percentage of 91.23% or an area of 924.21 hectares of the total area. The next sub-district which also has a large percentage of high potential land is Pancoran Mas District which has a percentage of 90.74% or an area of 1,622.03 hectares. When viewed spatially, the districts which have a large area of land for housing and living space are located in the southern, eastern, and western parts of Depok City. This is because the central area has open space that has the potential to be used as a place to live. In particular, in Cinere and Pancoran Mas Districts, two large rivers are also traversed so that they provide the potential for good water availability. Where these two factors are the dominant factors that determine humans in choosing a place to live and live in space. In detail, the conditions of availability and space requirements for housing in Depok City are presented in the following Figure 5.

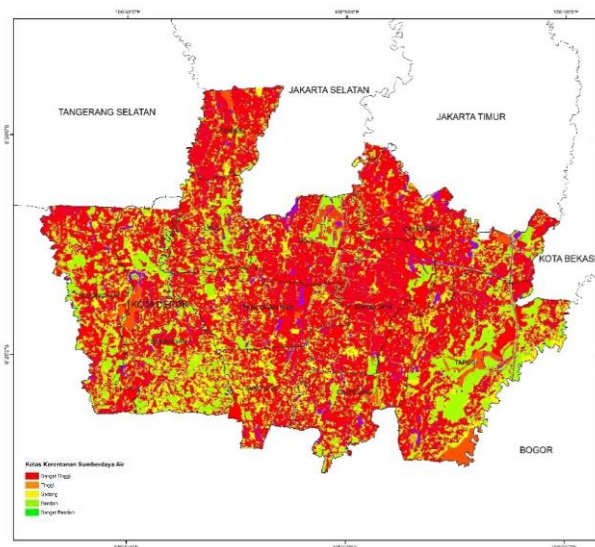


Figure 5. Carrying Capacity Map of Living Space Availability of Depok City Year 2019

The carrying capacity of ecosystem services, the availability of shelter or living space, have also fluctuated during the last 5 years. Changes in the availability of housing or living space are influenced by changes in land use cover in Depok City, particularly changes in non-vegetation land cover and vegetation cover. Areas that experience an increase in green cover and surface water will experience a decrease in the availability of shelter or living space, and vice versa. Based on the results of spatial analysis, it can be seen that the total area of Depok City which has increased is 1,122.21 ha, the total area that has decreased is 381.21 ha, and the area that remains is 19,436.00 ha. The sub-district that experienced the highest increase was the Tapos sub-district

with an area of 417.29 ha, while the sub-district that experienced the highest decrease was the Tapos sub-district with an area of 150.91 ha.

**8. Increasing need for public facilities**

The rapid development of the city of Depok has led to an increase in the need for public facilities. High population growth demands the availability of housing and other facilities that require high urban space. High population growth also has the potential to create environmental imbalances with the narrowing of green open spaces. The government is obliged to provide public facilities that can be easily accessed by all levels of society through the provision of public spaces such as safe and comfortable city parks and other public facilities such as public transportation facilities, traffic road facilities, sports facilities, social facilities, worship facilities, health facilities. and tourism facilities.

Road transportation is organized to realize road traffic and transportation that is safe, safe, fast, smooth, orderly and orderly, comfortable and efficient, capable of integrating other modes of transportation, reaching all corners of the land area, to support equity, growth, and stability as a driving force, driving and supporting national development at a cost that is affordable to the purchasing power of the people.

Depok city road network is in the form of a grid that forms a crossing point for the movement of people and goods from the south covering the Bogor Regency to Jakarta in the north. The pattern of movement from east to west is for the movement from Bekasi to Tangerang and even the Banten region.

**9. Regional competitiveness and creative economy are not yet optimal**

Depok is one of the capital city buffer cities with good economic growth. Economic growth in Depok is also inseparable from the existence of a creative industry that is developing and running in Depok. Based on information reported on Tempo, the economic growth rate (LPE) of Depok City increased from 6.54 percent in 2016 to 7.28 percent in 2017. This economic growth rate is certainly inseparable from the existence of the creative industry in Depok and also the increasing use of mass technology. now or the internet by the younger generation. The contribution of the creative economy to regional bruto domestic products (PDRB) has reached 10.06 percent. The largest contribution was from the SMEs in Depok City in the fashion sector, which amounted to 40.38 percent, crafts 29.60 percent, and culinary by 7.05 percent. The creativity of the young generation in Depok City is certainly influenced by the increase in new ideas and thoughts from the young generation of Depok City.

The facts obtained in the field show that the ideas and thoughts of the younger generation in Depok City have not been optimally explored. This can be seen from the phenomenon that shows the difficulty of expressing the creativity of the younger generation in the city of Depok. Creativity events such as music events, dance performances, fashion shows, and even art exhibitions are only held in shopping centers. In addition, the large number of students, university students, and young entrepreneurs in Depok City is also a potential that has not been explored optimally due to the difficulty of finding a place as a center for creative activities to increase productivity and creativity among millennials or the younger generation. Based on observations from creative hubs in Jakarta and Bandung, several problem phenomena can be found. Less optimized space organization and spatial planning that has not stimulated human behavior and activity patterns that support productivity and creativity.

Regional Economic Development Zones are a regional economic development approach by dividing the territory of an area based on its superior potential, in one area it can consist of two or more zones and a zone can consist of two or more clusters. Each zone is named according to its superior potential, as well as the name for each cluster. The development of the economic development zone for Depok City is presented in the following Table 6.

Table 6. The Division of the Economic Development Zone of Depok City

No	District	Economic Development Zone
1	Cinere District	Vertical Residential Area
2	Bojongsari District	Agroindustry Center Area
3	Cibubur District	Ecotourism Area
4	Cimanggis District	Creative Industry Economic Area
5	Tapos District	Margonda 3 Area
6	Citayam District	Residential Area

Based on the table above, it can be seen that Cimanggis District is a sub-district that is focused as a zone for the development of creative industries. Besides being a center for the development of the creative industry, Cimanggis District has a strategic location because it is located on the connecting road between Bogor Regency and East Jakarta City, is located near the economic center of Depok City, namely Margonda, and is close to the education center as a supply of human resources for the creative industry in the future.

**2.4. Analysis of the Linkage of Sustainable Development Issues**

Depok City has continuously carried out development with various activity programs in the Depok City RPJMD. Depok City sustainable development issues and linkage analysis are presented in the following table.

Table 7. Issues of Sustainable Development In Depok City and Linkage Analysis

Depok City Sustainable Development Issues	Linkage Analysis
1. Changes in land function and reduced biodiversity	The conversion of agricultural land and urban forest areas in Depok City has caused land criticality. In the RPJMD, changes to land use change are part of the issue of sustainable cities and settlements.
2. Waste management is not optimal	Domestic and industrial waste is an issue of the RPJMD in the form of clean water and proper sanitation, this is because waste management is included in proper sanitation.
3. Vulnerability of the region to floods and landslides	Floods and landslides are natural disasters that correlate with climate change. The frequency of flood events that are increasingly related to the RPJMD issue is the realization of sustainable cities and settlements.
4. Increased congestion	The congestion that occurs in Depok City is related to the gap between the increasing demand for transportation compared to the availability of transportation infrastructure, the main impact of congestion is the obstruction of the development of cities and sustainable settlements.
5. Decreased air quality	The problem of decreasing air quality is related to the decline in public health, the link with the RPJMD is the issue of a healthy and prosperous life.
6. Decrease in water quality and quantity	Pollution in water bodies and a decrease in the quantity of groundwater are caused by domestic and industrial activities. Issues related to the RPJMD are clean water and proper sanitation.
7. Decrease in environmental sanitation and lack of sanitation facilities	The lack of sanitation facilities causes a decrease in environmental sanitation, this is in line with the issue of the RPJMD for clean water and proper sanitation.
8. Increasing need for public facilities	Improved public facility infrastructure will reduce social inequality and create a sustainable city of Depok. This also intersects with other issues in the form of decent work and economic growth.
9. Regional competitiveness and creative economy are not yet optimal	Regional competitiveness and improvement of the creative economy are in line with the issue of the RPJMD for decent work and economic growth, as well as cooperation from various parties, which will further enhance the objectives.

Sumber : Analisis, 2020

**Conclusion**

This study resulted that the 39 issues of strategic sustainable development in Depok City were grouped into 9 issues based on similarity in sectors and themes of the issues. The 9 issues that were captured through the FGD are changes in land-use and reduced biodiversity, non-optimal management waste, regional vulnerability to floods and landslides, increased congestion, decreased air quality, decreased water quality and quantity, decreased environmental sanitation and lack of sanitation facilities, increased demand for public facilities and non-optimal regional competitiveness and creative economy.

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