

# Sustainable traditional market development in Bogor District, West Java, Indonesia

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## ABSTRACT

Bogor District (West Java, Indonesia) consists of 40 subdistricts and 483 villages, and because of the development of Metropolitan Jabodetabekpunjur (Jakarta-Bogor-Depok-Tangerang-Bekasi-Puncak-Cianjur), has the potential for rapid growth in traditional markets. The increase of GRDP (Gross Regional Domestic Product) value is indirectly affected by the conditions of economic activity, including market infrastructure and its sustainability. The objectives of this research are to identify potential traditional market development locations (environmental aspect) and development feasibility (economic aspect), and to draw up the concept of distributed market development (social aspect). We used agency and field surveys, observations and interviews, as well as employed qualitative analyses including scoring system, descriptive statistics and strategic decision making. We identified 26 subdistricts' traditional markets and 47 village traditional markets, 12 markets which under category of most feasible markets, 16 feasible markets, and 12 unfeasible markets. The first optimization model is achieved by Kemang subdistrict while the second position is achieved by Dramaga subdistrict and the third position is achieved by Ciawi subdistrict. According to the development plan of Bogor District for 2018-2038, the highest population will be in Gunungputri and the lowest in Cariu, with a predicted demand for 280 markets, which supports the potential development of 202 new markets

## ABSTRAK

Kabupaten Bogor (Jawa Barat, Indonesia) terdiri dari 40 kecamatan dan 483 desa, dan karena perkembangan Metropolitan Jabodetabekpunjur (Jakarta-Bogor-Depok-Tangerang-Bekasi-Puncak-Cianjur), memiliki potensi pertumbuhan yang cepat di bidang pasar tradisional. Peningkatan nilai PDRB (Produk Domestik Regional Bruto) secara tidak langsung dipengaruhi oleh kondisi kegiatan ekonomi, termasuk infrastruktur pasar dan keberlanjutannya. Penelitian ini bertujuan untuk mengidentifikasi potensi lokasi pengembangan pasar tradisional (aspek lingkungan) dan kelayakan pengembangan (aspek ekonomi), serta menyusun konsep pengembangan pasar terdistribusi (aspek sosial). Kami menggunakan survei keagenan dan survey lapangan, observasi dan wawancara, serta menggunakan analisis kualitatif termasuk sistem penilaian, statistik deskriptif dan pengambilan keputusan strategis. Kami mengidentifikasi 26 pasar tradisional kecamatan dan 47 pasar tradisional desa, 12 pasar yang termasuk dalam kategori pasar paling layak, 16 pasar layak, dan 12 pasar tidak layak. Model optimasi pertama diraih oleh Kecamatan Kemang sedangkan posisi kedua diraih oleh Kecamatan Dramaga dan posisi ketiga diraih oleh Kecamatan Ciawi. Sesuai rencana pembangunan Kabupaten Bogor 2018-2038, jumlah penduduk tertinggi berada di Gunungputri dan terendah di Cariu, dengan prediksi permintaan 280 pasar, yang mendukung potensi pengembangan 202 pasar baru

**Keywords:** *development, location, optimization model, sustainability, spatial planning, traditional markets.*

## INTRODUCTION

The market (a place where buyers and sellers can meet to facilitate the exchange or transaction of goods and services) has a very close relationship with the economic activities of society, both production, distribution and consumption because markets can be seen as arenas of distribution or exchange of goods. The interests of producers and consumers meet and in turn determine the continuity of the economic activities of their communities. The existence of traditional markets (the places where sellers and buyers meet which is marked by direct buying and selling transactions and usually there is a bargaining process) in Bogor District is one of the economic heart of the community and has been integrated into people's lives. In addition, the market has become an indicator of regional progress because a

market is not just a place for buying and selling but more than that the market is related to the life style and social culture of the community so that the market, especially the people's market, can be a vehicle for economic activity, social interaction, and recreational facilities both the market atmosphere and merchandise products that are distinctively identified by the local wisdom of the community.

One of the potentials that can be the center of economic growth is traditional or people's markets, both at the subdistrict and village level. Developing these markets can help increase the potential for regional economic growth, boosting regional competitiveness, which will in turn encourage the competitiveness of national economy. Market development is a very important part of national development, such facilities

and infrastructure support economic activities and serve to provide services for the flow of goods, particularly in the distribution of goods and services from sources of raw materials to production sites and to their marketing locations, at local, regional, national and international levels. Therefore, the existence of market facilities and infrastructure is very much needed to support the socio-economic activities of the community, both those that already exist and those that are likely to be developed. The existence of the market and distribution of its services in Bogor District must also be able to support high mobility from production centers to the market to increase the geographical coverage of community economic development, as well as support equitable and sustainable economic growth in each district and/or village. The objectives of this study are first to identifying market locations and development and/or market development based on environmental aspects. Secondly, to identifying the feasibility of development and/or market development based on economic aspects, and the third is to develop a concept of market development based on distribution per subdistrict based on social aspects.

The market can be defined as an institution or mechanism where buyers (who need it) and sellers (who produce) meet and jointly exchange goods and services (Campbell, 1990 in KPRI 2015a and KPRI 2015b). The market is a social space in addition to economic space. Factors that affect the popularity of people's markets include the character / culture of consumers. Although information about modern lifestyles is easily obtained, it seems that people still have a culture to keep visiting and shopping at the people's markets. There is a very basic difference between people's markets and modern markets. That difference is that in the market there is still a price bargaining process, whereas in the modern market the price is fixed by the price tag. In the bargaining process there is a personal and emotional closeness between sellers and buyers that is impossible to obtain when shopping in modern markets (Mukhlis, 2007 in KPRI 2015a and KPRI 2015b). Some markets have their own characteristics and this distinguishes one market from another.

The traditional market is also a cultural asset that has an important role in people's lives, especially rural agrarian societies. Sustainable market development need to consider market location and accessibility, market service areas, and market functions and roles. A market should be at a strategic location, this is due to the activities that occur in the market and the importance of the market's role as a component of city, regional and regional services that results in the influence of each supporting element of the city/district's economic activities. Some factors that influence the selection of

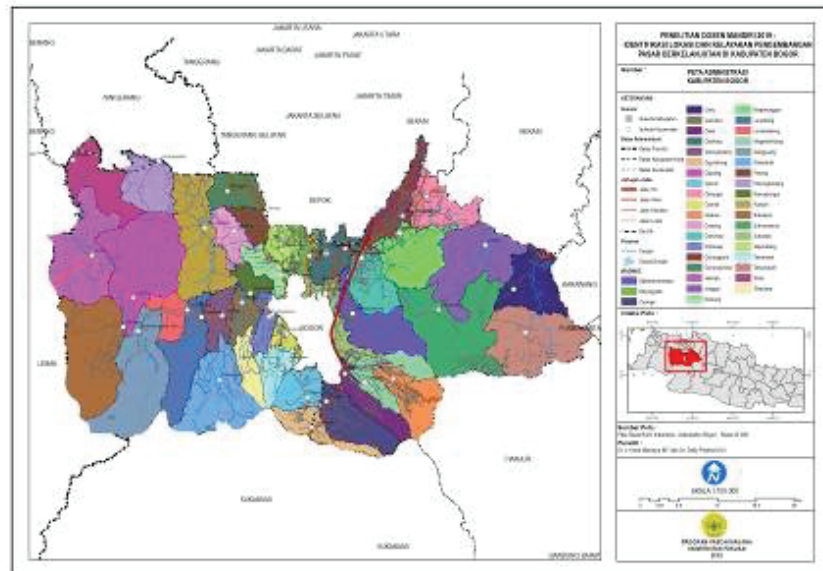
market location (Miles, 1999 in KPRI 2015a and KPRI 2015b) are: zoning (land allotment); physical location; utility; transportation; parking; environmental impact; public service; community acceptance/response (including behavior change); demand and supply (population growth, employment and income distribution). Based on Minister of Public Works Decree No. 378/KPTS/1987 concerning Ratification of 33 Indonesian Building Construction Standards can be described as follows: a) place for collecting agricultural products. b) place of distribution of 30 industrial goods. c) a place to exchange goods. d) place for buying and selling goods and services. e) place of trade information. The role of the market is very diverse along with the development of market functions and the development of a variety of activities that occur.

## METHODS

Various approaches such as territorial, social characteristic, economic, benefit, local culture, as well as technical were used in this research. Meanwhile, what is meant by technical approach here includes architectural design aspects, market spatial design aspects, environmental aspects, technological aspects, local character aspects, and the future aspects. The study was conducted in in Bogor District (Figure 1).

Data collection methods of baseline data in the context of market location and alternative locations derived from: existing market profiles and alternative development and/or other developments; supporting secondary data relating to the development policies of the people's market; support data in market development based on Indonesian building regulations from the Ministry of Public Works; data and regulations concerning environmental sustainability and market environment management; and with market development and other related data. This study uses secondary and primary data based on the types and sources as follows (Table 1).

Data analysis methods or techniques to answer research questions and formulate problems with stages are: 1) identify the location of development and/or market development based on environmental aspects with descriptive analysis techniques and assessments with weighting or scoring system; 2) identifying the feasibility of development and/or market development based on economic aspects with descriptive statistical analysis; and 3) develop the concept of market development based on distribution per district based on social aspects with analyzing and developing the concept of regional development based on the optimal location choice decision making.



**Figure 1.** Area of Bogor District with subdistrict boundaries and survey locations

**Table 1.** Data types and sources

No.	Objectives	Data Types	Data Source
1	Identifying the location of development and / or market development based on environmental aspects	<ul style="list-style-type: none"> <li>•RTRW and RPJMD</li> <li>•Existing land use</li> <li>•Market excise and development plans</li> </ul>	<ul style="list-style-type: none"> <li>•Bappelitbang Kabupaten Bogor</li> <li>•Dinas PU dan Penataan Ruang Bogor</li> <li>•Dinas Lingkungan Hidup Kabupaten Bogor</li> </ul>
2	Identify the feasibility of development and / or market development based on economic aspects	<ul style="list-style-type: none"> <li>•RTRW and RPJMD</li> <li>•Existing land use</li> <li>•Market excise and development plans</li> <li>•Market legality</li> </ul>	<ul style="list-style-type: none"> <li>•Bappelitbang Kabupaten Bogor</li> <li>•Dinas PU dan Penataan Ruang Bogor</li> <li>•Dinas Perdagangan dan Perindustrian Kabupaten Bogor</li> </ul>
3	Develop concept of market development based on distribution per district based on social aspects	<ul style="list-style-type: none"> <li>•RTRW and RPJMD</li> <li>•Existing land use</li> <li>•Market excise and development plans</li> <li>•Community perceptions and market traders</li> </ul>	<ul style="list-style-type: none"> <li>•Bappelitbang Kabupaten Bogor</li> <li>•Dinas PU dan Penataan Ruang Bogor</li> <li>•Badan Pengelolaan Pendapatan Daerah Kabupaten Bogor</li> </ul>

**RESULTS AND DISCUSSION**

Bogor District has a total area of 2,986.20 km<sup>2</sup> which consists of 40 Districts and 434 Villages / Kelurahan. The subdistrict that has the largest area is Jasinga with an area of 208.06 km<sup>2</sup> over about 7.81% of the total area of Bogor District and the smallest one is Ciomas with an area of 16.30 Km<sup>2</sup> or about 0.61% of the total area of Bogor District. Bogor District is divided into three Development Areas (WP) of: West WP, Central WP and East WP. For more details about the administrative area of each district, administration, distribution of WP and index hierarchy in Bogor District in Table 2.

Identify location of development and/or market development based on environmental aspects in Bogor

District in the existing condition based on its distribution, both traditional and modern markets, where the market is a form of crowd and interaction between people where as one of the places to meet the needs of human life, and there is trade activity. Traditional markets in management are supervised and managed by local governments, whereas for modern markets the management is private, but there are modern markets managed by local governments. Number of companies by form of business entity in Bogor District there are 26 traditional markets in the subdistrict and 47 village traditional markets. This means that not every subdistrict has a traditional subdistrict market. Moreover, the

**Table 2.** Administrative region size per subdistrict in the District of Bogor

No.	Subdistrict	Size (km <sup>2</sup> )	Percentage (%)	No.	Subdistrict	Size (km <sup>2</sup> )	Percentage (%)
1	Nanggung	135.25	5.08	21	Tanjungsari	129.98	4.88
2	Leuwiliang	61.77	2.32	22	Jonggol	126.86	4.76
3	Leuwisadeng	32.83	1.23	23	Cileungsi	73.78	2.77
4	Pamijahan	80.88	3.04	24	Klapanunggal	97.64	3.67
5	Cibungbulang	32.66	1.23	25	Gunungputri	56.28	2.11
6	Ciampea	51.06	1.92	26	Citeureup	67.19	2.52
7	Tenjolaya	23.83	0.89	27	Cibinong	43.36	1.63
8	Dramaga	24.37	0.91	28	Bojonggede	29.55	1.11
9	Ciomas	16.3	0.61	29	Tajurhalang	29.28	1.1
10	Tamansari	21.61	0.81	30	Kemang	63.69	2.39
11	Cijeruk	31.66	1.19	31	Rancabungur	21.68	0.81
12	Cigombong	40.42	1.52	32	Parung	73.76	2.77
13	Caringin	57.29	2.15	33	Cisceng	36.78	1.38
14	Ciawi	25.81	0.97	34	Gunungsindur	51.26	1.92
15	Cisarua	63.73	2.39	35	Rumpin	111	4.17
16	Megamendung	39.87	1.5	36	Cigudeg	158.89	5.96
17	Sukaraja	42.97	1.61	37	Sukajaya	76.28	2.86
18	Babakan Madang	98.71	3.71	38	Jasinga	208.06	7.81
19	Sukamakmur	126.78	4.76	39	Tenjolaya	64.44	2.42
20	Cariu	73.66	2.77	40	Parungpanjang	62.59	2.35

Source: Bogor District in Figures (2018)

traditional village market which only has 47 markets out of 434 villages. In addition there are 7 shopping centers, 14 hypermarkets and 763 minimarkets spread across subdistricts. Based on the Number of Trading Facilities by Type in Bogor District, there are several trading facilities, namely Traditional Markets, Local Markets, Regional Markets, Supermarkets /Supermarkets, Hypermarkets, Malls and Shops in Bogor District. There are 713 modern and traditional markets, for modern shops as many as 642 units and traditional and village markets as many as 73 units. the most modern shops are Indomaret (capitalise franchise name) with 356 units and 73 village traditional markets. Subdistricts that have the most modern markets, namely in Gunung Putri Subdistrict As many as 88 units, for the most traditional markets are in Tanjungsari District As many as 4 units. The smallest modern market and traditional market is Sukajaya, which has only 3 market units based on Bogor District BPS data. Identification of conditions and distribution of traditional markets and village markets based on environmental aspects from the field data (primary) and agency (secondary) with the following indicators: 1) RTRW and RPJMD: conformity of regional policies (scale 75-100), 2) existing land use: existing suitability (scale 50-75), and 3) existing market: conformity of market development standards (scale 1-50) with criteria: accessibility, security, safety, health, comfort, aesthetics, and adequacy. Based on the weighting of the criteria above, the worth / best value is between 200-225, worth / good between 150-200 and not worth / bad 75-150. Identification of development

sites and / or market developments based on environmental aspects in Bogor District can be analyzed by weighting as in Table 3.

Identified that based on environmental aspects, the markets in 40 subdistricts in Bogor District consisting of 29 traditional markets and 49 village markets are on average still in good/good categories, while per category is 12 decent/best markets, 16 decent/good markets, and 12 unfavorable/bad markets. Some of the indications of a market that is worthy/best are: traditional markets and the management of district or private or collaboration between them; decent/good markets are: village and traditional markets and district or private administrators; and inappropriate/ugly markets are: village and traditional markets and district government managers. Whereas the criteria for conformity with market development standards with criteria: accessibility, security, safety, health, comfort, aesthetics, and adequacy. Based on the distribution, it can also be identified that the market conditions that are worthy/best are located in the district capital and around the City of Bogor and along the main road / arterial road or collector, while good/decent market conditions are located relatively spread in each subdistrict and market conditions that are unfit/ugly located in subdistricts with low accessibility, so if it is associated with development it is expected to thoroughly consider these various aspects (see Figure 2).

Identifying market development based on economic aspects in Bogor District with Regional Development parameter is the rate of population growth. Bogor District as a residential area which is a buffer zone



**Table 3.** Market location and market development assessment in Bogor District 2018

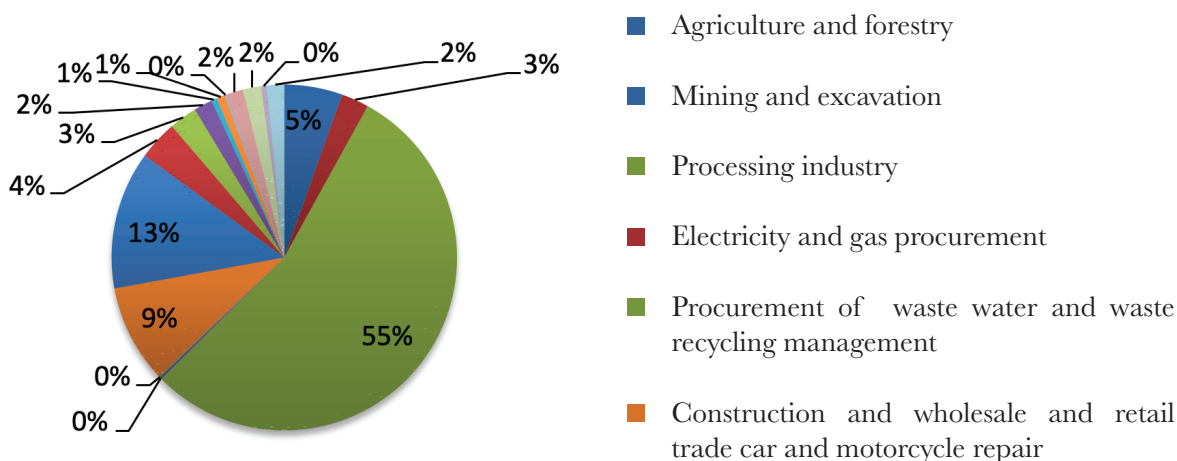
No.	Subdistrict	Markets		Weighting			Total	Information
		Traditional	Village	1	2	3		
1	Nanggung (Jl.Raya Ace Tabrani 65)	1 (private)	2	85	65	20	170	decent / best
2	Leuwiliang (Jl.Raya Leuwiliang)	1	-	90	70	40	200	good / good
3	Leuwisadeng (Desa Kalong II)	-	2	75	65	30	170	decent / best
4	Pamijahan (Jl.Raya Gunung Salah Endah)	1 (private)	2	85	60	20	165	decent / best
5	Cibungbulang (Desa Situ Udik)	-	1	75	55	20	150	unfavorable / bad
6	Ciampea (Rancabungur)	1	1	75	55	20	150	unfavorable / bad
7	Tenjo Laya (Tenjolaya)	-	2	85	60	20	165	decent / best
8	Dramaga	1	1	75	65	30	170	decent / best
9	Cisarua (Cisarua)	1	1	75	55	20	150	unfavorable / bad
10	Tamansari (Simagalih)	1 (Govern.)	-	90	75	45	210	good / good
11	Cijeruk (Cijeruk)	1 (Govern.)	-	100	75	50	225	good / good
12	Cigombong (Cigombong)	1 (Govern.)	-	100	75	45	220	good / good
13	Caringin (Jl.Kolonel Bustomi)	1	1	90	75	45	210	good / good
14	Ciawi (Jl.Raya Ciawi)	1 (Govern.)	-	100	75	45	220	good / good
15	Ciseng (Jl.Mad Nur 60)	1 (Govern.)	-	100	75	50	225	good / good
16	Megamendung	-	2	75	65	30	170	decent / best
17	Sukaraja (Cilebut Barat)	1	1	75	55	20	150	unfavorable / bad
18	Babakan Madang(Sentul)	-	1	75	65	30	170	decent / best
19	Sukamakmur	-	1	75	65	30	170	decent / best
20	Cariu	1	-	75	65	30	170	decent / best
21	Tanjungsari	-	4	75	65	30	170	decent / best
22	Jonggol (Cikupa)	1	2	75	65	30	170	decent / best
23	Ciomas (Jl.Raya Ciomas 325)	1 (private)	2	95	70	35	190	decent / best
24	Klapanunggal (Cikaharupan)	-	1	75	55	20	150	unfavorable / bad
25	Gunung Putri	-	2	75	65	30	170	decent / best
26	Ciulengsi	1	1	100	75	45	220	good / good
27	Cibinong	1 (Govern.)	-	100	75	50	225	good / good
28	Bojong Gede (Citayam)	1	1	75	65	30	170	decent / best
29	Tajur Halang	-	1	75	55	20	150	unfavorable / bad
30	Kemang	1 (private)	2	100	75	50	225	decent / best
31	Rancabungur	-	1	75	55	20	150	unfavorable / bad
32	Parung (Jl.Pasar Parung, Waru)	1 (Govern.)	-	100	75	45	220	good / good
33	Citeureup	2 (BOI)	-	100	75	45	220	good / good
34	Gunung Sindur	1	-	75	65	30	170	decent / best
35	Rumpin	1	2	75	55	20	150	unfavorable / bad
36	Cigudeg	1	2	75	55	20	150	unfavorable / bad
37	Sukajaya	-	3	75	55	20	150	unfavorable / bad
38	Jasinga	1	3	75	55	20	150	unfavorable / bad
39	Tenjo (Jl.Abdul Patah)	1	3	75	65	30	170	decent / best
40	Parung Panjang	1	1	75	55	20	150	unfavorable / bad
<b>Total</b>		<b>29</b>	<b>49</b>					

Source: Field survey and market research analysis in Bogor District (2018)

**Figure 2.** A traditional market in Bogor District (Photo : <https://finance.detik.com>)

of Jakarta, has become one of the regions that has a rapid growth rate of modern markets during the period 2010 to 2015. With the largest population in West Java Province, Bogor District which in 2015 reached a population 5,459,668 people, so that it can become a promising region in the regional economic development. The value of the Gross Regional Domestic Product (PDRB) of Bogor District based on current prices (ADHB) according to the business field was dominated by the manufacturing sector from 2013 to 2016. In 2016 the processing industry sector had the highest amount of Rp. 100,528,244.78 million or 55%. While other sectors that have a high number are the car and motorcycle repair sector with a total of Rp. 23,784,157.51 million or 13%, the construction and wholesale trade sector with a total of Rp. 17,028,294.06 million or 9%. For the lowest amount, the procurement of waste management and

recycling waste water sector with a total of Rp. 196.957 million. For more details the contribution of each economic sector based on the value of GRDP in Bogor District. Along with the development of the economy of Bogor District, the GDP value of Bogor District until 2016 reached 184.17 trillion rupiah, aside from being dominated by the manufacturing industry category which was the largest contributor, the second dominance was in the categories: Wholesale and Retail Trade; Car and Motorcycle Repair with a contribution to the economy of Bogor District of 12.91 percent or 23.78 trillion rupiah. From time to time the number of modern markets tends to experience positive growth while traditional markets tend to experience negative growth. the number of modern trade centers in Indonesia, both hypermarkets, supermarkets, minimarkets, to convenience stores (Figure 3).



**Figure 3.** GRDP (Gross Regional Domestic Product) of Bogor District

Based on Spatial Planning (RTRW), Bogor District has issued Regional Regulation (Perda) No. 19/2008 concerning Bogor District Spatial Planning 2005-2025, which explains in detail the function of space in the form of spatial structure and spatial pattern. In this regulation it is mentioned that there are major growth orders that function as systematic centers of growth, where all infrastructure facilities and supporting infrastructure for development must be built in these growth centers. The location of these orders has been determined in the Bogor District 2005-2025 spatial planning document, namely Order I is located in Cibinong, Order II is located in the Districts of Cileungsi and Leuwiliang, and Order III is located in Jasinga District, Parung Panjang subdistrict, Parung, Ciawi, Cigombong and Cariu subdistrict.

Based on RTRW Bogor District has issued Regional Regulation (Perda) No. 19/2008 concerning Bogor District Spatial Planning 2005-2025, which explains in detail the function of space in the form of spatial structure and spatial pattern. In this regulation it is mentioned that there are major growth orders that

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The optimal location of the Bogor District main market is considering the existing market (assuming) with the assumption that the wholesale market will be built from scratch, all subdistricts in Bogor District have the opportunity to develop the wholesale market, and accommodate the City of Bogor RTRW which will no longer develop the wholesale market in Bogor City, so that the location of the wholesale market will be charged to Bogor District. Whereas the optimal location of the wholesale market by considering the existing market uses the assumption that the wholesale market will be developed from existing markets in Bogor District to

accommodate developed institutions. The area served is seen based on the area of demand and viewed from the area of production and the area of demand. The area of demand is used as a variable because initially the P-Median model is used to meet demand without considering where production is coming from. Because the determination of the location of the wholesale market is considered inadequate when it is only seen from the demand side, the P-Median model is modified by considering the production and demand areas.

Furthermore, seven Bogor District markets selected for analysis are the Cileungsi Market, Cibinong Market, Citeureup Market, Parung Market, Cisarua Market, Leuwiliang Market and Ciawi Market. The selection of the seven markets is assuming that the market has a great opportunity to be developed into a wholesale market in Bogor District because most of it is included in the class I market that serves the regional and surrounding areas and is in a strategic location. The three selected Bogor City markets are quite busy and dynamic markets in the sale of vegetables and fruits, with analysis: distance factor, travel time factor, factors in demand (demand) vegetables and fruits, and factors of production of vegetables and fruits. in determining the location of the bogor district main market based on 40 subdistricts in Bogor District by considering the 6 subdistricts in Bogor

City, using the assumption that the wholesale market will only be built in Bogor District because based on the revised Bogor District RTRW, there is no plan to develop a wholesale market again. in Bogor City, and all subdistricts in Bogor District have the same opportunities for the development of the wholesale market. In this analysis four optimization models are used with different indicators used. The first model used as consideration is the demand (demand) and the closest distance, the second model is the demand (demand) and the fastest travel time, the third model is demand (demand), production and the closest distance, and the fourth model is demand (demand), production and fastest travel time. The results in Table 4.

Based on the calculation results shown in Table 4.2 using the first model that considers demand and the closest distance, the first alternative for the wholesale market location is Dramaga subdistrict with an objective value of 723,134.51. This value shows the minimum total transportation costs in units of tons of kilometers. In this case it is assumed that freight is a function of demand and distance. The second alternative for the wholesale market location is Ciomas subdistrict with an objective value of 732,866.31. While the third alternative for the wholesale market location is the Bojonggede District with an objective value of

**Table 4.** Optimal location Bogor District main market which calculated based on 40 existing subdistricts in Bogor District by considering six existing subdistricts in Bogor City

No.	Optimization Model	Alternative Location 1		Alternative Location 2		Alternative Location 3	
		Sub-District	Objective Value	Sub-District	Objective Value	Sub-District	Objective Value
40 subdistrict in Bogor District and 6 subdistrict in Bogor City							
1	<i>Demand</i> -Closest Distance	Dramaga	723,134.51	Ciomas	732,866.31	Bojong-gede	748,737.64
2	<i>Demand</i> -Fastest Time	Ciomas	952,074.31	Ciawi	952,965.69	Dramaga	956,760.77
3	<i>Demand</i> -Production-Closest Distance	Dramaga	6,127,932.78	Ciomas	6,486,937.38	Ciampea	6,733,612.22
4	<i>Demand</i> - Production - Fastest Time	Kemang	8,457,065.77	Dramaga	8,513,616.9	Ciawi	8,557,052.81

Source: Analysis results (2018)

748,737.64.

The second model that considers demand and the fastest travel time, the first alternative for the wholesale market location is Ciomas subdistrict with an objective value of 952,074.31. The second alternative for the wholesale market location is Ciawi subdistrict with an objective value of 952,965.69. While the third alternative for the wholesale market location is Dramaga subdistrict with an objective value of 956,760.77. This value shows the minimum total transportation costs in units of minutes.

The third model that considers the production demand and the closest distance, the first alternative for

the wholesale market location is Dramaga subdistrict with an objective value of 6,127,932.78. The second alternative is Ciomas subdistrict with an objective value of 6,486,937.38. While the third alternative for the wholesale market location is Ciampea subdistrict with an objective value of 6,733,612.22. These values indicate the minimum total cost of transportation in units of tonnes of kilometers.

The fourth model that considers the production demand and the fastest travel time, the first alternative for the wholesale market location is the Kemang subdistrict with an objective value of 8,457,065.77. The second alternative for the wholesale market location is Dramaga subdistrict with an objective value of

8,513,616.90. Whereas the third alternative is Ciawi subdistrict with an objective value of 8,557,052.81. These values indicate the minimum total cost of transportation in units of minutes. The first alternative is because it has the smallest objective value. Ciomas subdistrict is the location of the second alternative wholesale market, while for the third alternative the wholesale market can be located in Bojonggede subdistrict or Ciampea subdistrict.

Dramaga subdistrict as the location of the first alternative wholesale market, is currently experiencing a fairly rapid development marked by the emergence of housing and trade facilities around Dramaga. The advantages of this district as a wholesale market location are: 1) The environment is still possible for the wholesale market development because Dramaga subdistrict still has a lot of vacant land; 2) It has a strategic location because it is close to several subdistricts that have quite high vegetable production in Bogor District such as Cibungbulang subdistrict, Ciampea subdistrict and Leuwiliang subdistrict; 3) Dramaga subdistrict has a location that tends to be in the middle near Bogor City. It has the potential for rapid development; 4) The location of Dramaga subdistrict is passed by primary collector road I (national road) that connects the boundaries of Lebak / Jasinga- Leuwiliang- Ciampea District and Bogor City; 5) The planned Bogor Ring Road is planned to reach Dramaga subdistrict, this will further increase accessibility to and from Dramaga subdistrict; 6) The planned construction of a new southern ring road in the city of Bogor from Jalan Sindangbarang to Jalan Raya Sukabumi which will further increase accessibility to and from the subdistrict of Dramaga. Based on these advantages, the Dramaga District has the potential to be built in the Bogor District.

The second alternative wholesale market location is Ciomas Subdistrict, Ciomas Subdistrict has a high density level compared to other subdistricts in Bogor District. The strengths and weaknesses of the Ciomas Subdistrict as a wholesale market location are: 1) Ciomas Subdistrict has a moderate population, compared to other subdistricts in Bogor District, but has a high density level marked by the large number of housing and trade facilities built in the subdistrict; 2) Ciomas Subdistrict has the Laladon Terminal, but in its operation the terminal has not been accompanied by the enforcement of regulations on public transport routes through the area; 3) Primary collector I (national road) road connecting the boundaries of Lebak/Jasinga-Leuwiliang-Ciampea District and Bogor City; 4) There is a market built in Ciomas Subdistrict which is adjacent to the Laladon Terminal. The purpose of building this market is to further optimize and stimulate the utility of the Laladon Terminal. But until now the market is relatively quiet; 5) There is a plan to construct a new southern ring road in the city of Bogor from Jalan Sindangbarang to Jalan

Raya Sukabumi which will further increase accessibility to and from Ciomas Subdistrict.

The third alternative wholesale market locations are Bojonggede subdistrict and Ciampea subdistrict. Bojonggede subdistrict is included in the advanced type with industrial community and service growth. This subdistrict is included in the Cibinong Raya region which has a function as a service node and distribution of marketing, production and the main service center for the Bogor District. This subdistrict has a fairly limited availability of land, which at present the development of the Bojonggede area as one of the densely populated residential areas and unfavorable topographic conditions because it has varied land contours. Ciampea subdistrict is dominated by villages with backward type with agricultural communities. Ciampea subdistrict is passed by primary collector road I (national road) connecting the boundaries of Lebak / Jasinga – Leuwiliang – Ciampea District and Bogor City. Based on primary data from 10 existing markets, Ciampea subdistrict is one of the suppliers of spinach and kale in existing markets.

The concept of market development based on distribution per district based on social aspects can be viewed from regional Development based on Population Projection, which is a routinely used parameter. The development of the population of Bogor District over a period of 5 years (2014-2018) and the results of the projections up to 2038 based on population growth data per district in Bogor District within a period of 5 years (2014-2018), then in total for the 20 year planning year (2018-2038). The total population of Bogor District in 2038 is projected to be 8,389,697 people. While based on population projections per district the largest population group identified is in Gunungputri subdistrict with a very high population of 1,350,862 people and the smallest is in Cariu subdistrict with a population of 41,746 people with the other areas having relatively stable growth rates. Based on the results of these projections, it can be identified that the development of the region will be centered in the Gunungputri subdistrict in addition to Cibinong as the district capital and the area which will be slow in its development is the Cariu subdistrict. The results of this prediction will be used to predict market development based on the distribution of supporting populations in the future (2038). Based on district and city market planning standards and the results of projections up to 2038 can be seen in Table 5.

Guidelines for Minimum Service Standards Guidelines for Determination of Minimum Service Standards in Spatial Planning, Housing and Settlements and Public Works (Minister of Settlement and Regional Infrastructure Decree No.534/KPTS/M/2001), which stipulates that the Environmental Facilities in this case commercial facilities are part from the level of availability of primary and secondary needs that must be available in each district with at least 1 (one) market



available for every 30,000 population and easily accessible. In addition, based on the type of market, the supporting population ratio is as follows: type A: 220,000, type B: 60,000, and types C and D: 15,000.

Based on population growth data per district in Bogor District within a period of five years (2014-2018), then in total for the 20 year planning year (2018-2038), the total population of Bogor District in 2038 is projected to be

8,389,697 inhabitants and market needs based on supporting population standards of at least one market per 30,000 population for 1 market are 280 markets and based on existing market data (traditional and rural) as many as 78 markets and means that the needs until 2038 are 202 markets.

Based on the projected population per district identified groups of needs for market development are as

**Table 5.** Projection of total population in District of Bogor and the needs of market in 2038

No.	Subdistrict	2038	Traditional Markets	Public Markets	Number of Existing	Standard 30 thousands in habitants	Prediction of Needs
1	Nanggung	90,570	1	2	3	3	0
2	Leuwiliang	141,413	1	-	1	5	4
3	Leuwisadeng	80,983	-	2	2	3	1
4	Pamijahan	156,219	1	2	3	5	2
5	Cibungbulang	150,706	-	1	1	5	4
6	Ciampea	190,132	1	1	2	6	4
7	Tenjolaya	67,622	-	2	2	2	0
8	Dramaga	135,469	1	1	2	5	3
9	Ciomas	269,482	1	1	2	9	7
10	Tamansari	137,941	1	-	1	5	4
11	Cijeruk	110,811	1	-	1	4	3
12	Cigombong	145,027	1	-	1	5	4
13	Caringin	152,195	1	1	2	5	3
14	Ciawi	154,287	1	-	1	5	4
15	Cisarua	152,743	1	-	1	5	4
16	Megamendung	133,436	-	2	2	4	2
17	Sukaraja	293,896	1	1	2	10	8
18	Babakan Madang	185,305	-	1	1	6	5
19	Sukamakmur	88,996	-	1	1	3	2
20	Cariu	41,746	1	-	1	1	0
21	Tanjungsari	53,589	-	4	4	2	-2
22	Jonggol	202,483	1	2	3	7	4
23	Cileungsi	233,636	1	2	3	8	5
24	Klapanunggal	198,188	-	1	1	7	6
25	Gunugputri	1,350,862	-	2	2	45	43
26	Citeureup	319,671	1	1	2	11	9
27	Cibinong	727,947	1	-	1	24	23
28	Bojonggede	652,552	1	1	2	22	20
29	Tajurhalang	199,321	-	1	1	7	6
30	Kemang	164,938	1	2	3	5	2
31	Rancabungur	63,304	-	1	1	2	1
32	Parung	233,041	1	-	1	8	7
33	Ciseeng	156,500	2	-	2	5	3
34	Gunungsindur	226,816	1	-	1	8	7
35	Rumpin	165,220	1	2	3	6	3
36	Cigudeg	143,569	1	2	3	5	2
37	Sukajaya	60,141	-	3	3	2	-1
38	Jasinga	100,284	1	3	4	3	-1
39	Tenjo	83,822	1	3	4	3	-1
40	Parungpanjang	189,834	1	1	2	6	4
<b>District of Bogor</b>		<b>8,389,697</b>	<b>29</b>	<b>49</b>	<b>78</b>	<b>280</b>	<b>202</b>

Source: Bogor District in Figures (2018); Analysis result of the research team (2018)

follows: the development of the number of markets is empty are 3 subdistricts i.e. Nanggung, Tenjolaya and Cariu; between 1-5 is 23 subdistricts i.e. Leuwiliang, Leuwisadeng, Pamijahan, Cibungbulang, Ciampea, Dramaga, Tamansari, Cijeruk, Cigombong, Caringin, Ciawi, Cisarua, Megamendung, Babakan Madang, Sukamakmur, Jonggol, Ciliang, Cijeruk, Cigombong, Caringin, Ciawi, Cisarua, Megamendung, Babakan Madang, Sukamakmur, Jonggol, Cileungsi, Kemang Rancabungur, Ciseeng, Rumpin, Cigudeg and Parungpanjang; between 6-10 is 7 subdistricts i.e. Ciomas, Sukaraja, Klapanunggal, Citeureup, Tajurhalang, Parung and Gunungsindur; greater than 10 are 3 subdistricts i.e. Gunungputri, Cibinong, and Bojonggede; and exceeded the number of needs is 4 subdistricts i.e. Tanjungsari, Sukajaya, Jasinga and Tenjo.

## CONCLUSION

The identification of future market locations and/or market developments based on environmental aspects as follows: there are 26 traditional markets and 47 village traditional markets, scattered in the subdistricts the district; the number of trading facilities by type in 2016 was 1332 units and the most were supermarkets which both modern and traditional markets had increased for one year; the number of modern and traditional markets and village markets is 713 units with details of 642 units of modern shops and 73 units of traditional markets and village markets.

Based on the distribution, the best/fair market conditions are located in the district capital and around Bogor City and along the main road/arterial road or collector, while the good/decent market conditions are located relatively spread in each district and unfit/bad market conditions located in a district with low accessibility; identification of the feasibility of development and/or market development based on economic aspects as follows: as a residential area and a buffer zone of Jakarta, is one of the regions that has a rapid growth of modern markets during the period of 2010 to 2015 and with the largest population in West Java Province with a population of 5,459,668 people, so that it can become an area promising in the economic development of the region; the number of modern markets tends to experience positive growth over time, whereas traditional markets tend to experience negative growth; and the existing optimization model considers

the production demand and the fastest travel time, the first alternative for the wholesale market location is Kemang District, the second alternative Dramaga District and alternatives third, Ciawi Subdistrict.

Ciomas District is the location of the second alternative wholesale market, while for the third alternative the wholesale market can be located in Bojonggede District or Ciampea District; and the concept of market development based on distribution per district based on social aspects as follows: population growth per district within a period of 5 years (2014-2018) then in total for the 20 year planning year (2018-2038) a total of 8,389,697 people is projected, with the largest population subdistrict of Gunungputri District being 1,350,862 inhabitants and the smallest of Cariu Subdistricts namely 41,746 people and others relatively stable growth rate. The development of the region will be market needs based on supporting population standards of at least 30,000 for 1 market are 280 markets and based on existing market data (traditional and village) of 78 markets and means that the needs until 2038 are 202 markets.

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