Evaluation of Space Facility Needs Entering Bonus Erem Demography in Purbalingga District

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Abstract. The highest concentration of population density in Purbalingga District is in Kecamatan Purbalingga with an average of 4,011 people / km2 in Year 2015, jumped dramatically compared to the previous year, population density in this sub district at 3,968 people / km2, due to population increase reaching 631 in the period of one year. The increasing composition of the population has an effect on the problem of the need and availability of service facilities, such as education, health, economic, public and public service facilities. The current population can be used to predict the population at the peak of the demographic bonus, which is expected to occur 15 years later. The purpose of this research is to know the space requirement of 15 years service facility in Purbalingga sub-district. The method used is the analysis of primary and secondary data, with qualitative descriptive analysis techniques. While the results of research shows that education service facilities still require space needs, whereas for health service facilities, economy, public and public services is not necessary urgency of additional space needs up to 15 years to come, because the space available today can still meet the needs of the time will come.

Keywords: Demographic Bonus, Service Facilities, Space Requirement

1. Introduction

Indonesia has entered the era of demographic bonuses since 2012, where population structure is dominated by productive age compared to non-productive ages, indicated by the increasing number of working population and the fewer dependents, the demographic bonus era is expected to reach its peak in the upcoming Year 2035, with the number of people in productive age greater in quantity is certainly very profitable as a national development capital [1]. Demographic Bonus can be a boon for the Indonesian nation, provided that the government must prepare high-quality young generation through education, training, health, employment and investment [2].

Demographic bonus also implies development planning in a region because the understanding of the condition of the population plays a very important role for the occurrence of equitable development, with the availability of reliable population data such as structure, population growth rate and sex ratio will facilitate the formulation of developers to determine strategic plans such as planning in the provision of health facilities, education, settlements and the environment that will be needed for the inhabitants [3].
One of the demographic problems that require the handling of development planning occurs in Purbalingga District Purbalingga Regency Central Java Province. The subdistrict located in the southern part of the Slamet Volcano is the region with the highest concentration of population density in Kabupaten Purbalingga with an average of 4,920 persons / km2 in 2015, with a population of 59,042 people, comprising 28,715 men and 30,327 women, where in the previous year the population density of 3,968 people / km2, this is proof that in one year there was an increase of 631 people who increasingly crowded the Purbalingga District which only has the area of 1,473.10 Hectares, the area is the smallest among 18 districts in Purbalingga District. As for the population growth recorded on the same data source, mentioned that in Purbalingga sub-district during the past year the population growth was 1.08 lower than a year earlier but higher than two years earlier, which only touched 0.18 [4].

The composition of the population in Purbalingga sub-district continues to increase, certainly giving effect to the problem of planning and provision of service facilities, as according to Muta'ali (2015) [5] that the residents who live in a region, in carrying out their life and activities need the support of service facilities, general facilities can be grouped into two, namely public facilities, social and economic, while the first facility is largely the responsibility of the government and generally available in all places, while the third facility generally adheres to market needs, while knowing the availability and serviceability of a service facility is very important to done, because it will provide a picture of the reality of the achievement of public services and evaluation of a facility, so that can be obtained preparation of priority steps in the provision of such facilities.

As in the development planning of Baghdad City, the time of the Caliph Al Mansur (762 AD) started from counting the population of the city, after which the next population was estimated, and then built the facilities needed by the population such as mosques, schools, libraries, gardens, , commercial area, transit place for travelers, to separate public baths between men and women, as well as general food and waste processing facilities. All these facilities are in an area that can be reached by foot and with standard quality, so that the population to meet the needs of living, working and studying them do not need to travel far, of course on the other hand negate the problem of traffic jams and reduce air pollution [6].

The availability of service facilities in Kecamatan Purbalingga is certainly different from the demography demographic age which is expected to peak in the next 15 years, both in quantity and space that will be used for service facility activities. Thus, to overcome the increasing number of population with limited area in Purbalingga sub-district, so that in the future it will not cause population problems, it is necessary to evaluate the development of service facility which result of this research can be used for subsequent planning materials in Purbalingga District service facility development entering era demography bonus.

2. Method

The location of this research is in District Purbalingga Purbalingga Regency Central Java Province. Regency of Bojongsari is adjacent to District of Bojongsari in the south, Kemangkon Subdistrict in the east, Kaligondang Subdistrict and Bukateja District, and Regency of Purbalingga in the west.

This subdistrict is divided into 11 villages and 2 villages, with the total area of 1,473.10 hectares, with the largest area is Jatisaba 205 Hektar and the smallest is Purbalingga Kulon with 52 acres. The dominance of land use in Purbalingga sub-district is Building / Garden with 594.28 Hectares area, followed by semi-technical irrigated rice field, technical irrigation rice field, irrigated rice field, rainfed lowland, pond, state forest and others Kecamatan Purbalingga Dalam Figures 2016 [4].

The method of this research is qualitative descriptive qualitative description of data service facilities, data area development of service facilities arranged by RTRW, data implication of service facility space needs for 15 years to come in Purbalingga Sub-district.
Primary data of this research is data of service facility distribution in Purbalingga Sub-district obtained from field survey and documentation. While the secondary data of this research in the form of Local Government Regulation Purbalingga Regency Number 5 Year 2011 About Spatial Planning Purbalingga District Year 2011-2031.

The data collection phase of the service facility begins with the field survey of the entire population of existing service facilities in Purbalingga sub-district, then carried out the recording of the facility name, the grouping of facilities type and the taking of documentation in the form of photos. Includes educational, health, economic, public and public service facilities.

While the data area of the development of service facilities arranged by the RTRW can be obtained from Regional Regulation of Regency of Prubalingga Number 5 Year 2011 regarding Spatial Planning of Purbalingga District Year 2011-2031.

The implication data of space needs of service facilities for the next 15 years in Purbalingga District can be calculated by several calculation steps listed in the book Mut'ali (2015) [5] entitled Regional Analysis Techniques for Regional Planning. This step starts from the first count: 1) Population Projection, using the following formula:

\[ P_n = P_0 (1+r)^t \]................................................................. (1)

Information:
Pn: Population in year n
Po: Population in the early years
1: The number of constants
r: Population growth rate (in percent)
t: Number of year ranges from beginning to year n

Then after determining the projection of the population, the calculation results can be used to calculate 2) Projection of Space Needs of Service Facilities, using the formula:

\[ D_{i-t}(n) = \frac{J_{P_t}(n)}{T_{hi}} \]............................................................. (2)

Where

\[ J_{P_t}(n) = \frac{P_n}{T_{hi}} \].................................................................(3)

Information:
Di-t (n): facility requirement i in year n (projections)
JPt (n): Population of the projected result in year n
Pn: Population projection by geometry growth method
Thi: Facility threshold i

Additional space requirement for facility i in year n (JFT) is obtained from:

\[ J_{TF} = D_{i-t}(n) - S_i \] (Availability of current service facility)............................ (4)

After projected needs of new service facilities can then be determined 3) The Implication of Space Needs for Service Facilities for the Next 15 Years, using the following formula:
Dri : STD x JTF.............................(5)

Information:
Dri : Space Requirements for Facilities i
JTF : Additional space requirement for facility i in year n
STD: Standard minimum space requirement for facility i

For minimum space requirement standard for the service facility itself has been arranged in SNI 03-1733-2004 about Procedure of Environmental Planning of Urban Environment in Table 1 below:

| No. | Facility Groups and Types of Facilities | Thresholds Supporting Residents (Souls) | Standard Minimum Space Requirements (m²) |
|-----|----------------------------------------|----------------------------------------|----------------------------------------|
| A   | EDUCATION                              |                                        |                                        |
| 1.  | Kindergarten                           | 1.250                                  | 1.200                                  |
| 2.  | Primary School                         | 1.600                                  | 1.500                                  |
| 3.  | Junior High School                     | 4.800                                  | 10.000                                 |
| 4.  | Senior High School                     | 4.800                                  | 20.000                                 |
| B   | HEALTH                                 |                                        |                                        |
| 1.  | Posyandu                               | 1.250                                  |                                        |
| 2.  | Medical Center                         | 2.500                                  | 300                                    |
| 3.  | Maternity Clinic                       | 30.000                                 | 1.600                                  |
| 4.  | Puskesmas auxiliary                    | 30.000                                 | 500                                    |
| 5.  | Puskesmas                              | 120.000                                | 650                                    |
| 6.  | Hospital                               | 240.000                                | 86.400                                 |
| 7.  | Doctor Practice Place                   | 5.000                                  | -                                      |
| 8.  | Drugstore                              | 30.000                                  | 350                                    |
| C   | ECONOMY                                 |                                        |                                        |
| 1.  | Stores / Stalls                        | 250                                    | 100                                    |
| 2.  | Shop                                   | 6.000                                  | 1.200                                  |
| 3.  | Environmental Shopping Center / Small Market | 30.000                           | 13.500                                 |
| 4.  | Commercial Center (Store, Market, Bank, Office, Industry) | 120.000 | 36.000                                 |
| 5.  | Shopping Center                        | 340.000                                | 96.000                                 |
| D   | GENERAL                                |                                        |                                        |
| 1.  | Multipurpose Building                  | 120.000                                | 3.000                                  |
| 2.  | Cinema Building                        | 120.000                                | 2.000                                  |
| 3.  | Local Mosque                           | 2.500                                  | 600                                    |
| 4.  | Mosque of Kelurahan                    | 30.000                                  | 3.600                                  |
| 5.  | Masjid Kecamatan                       | 120.000                                | 5.400                                  |
| 6.  | Playground and Sports Field            | 480.000                                | -                                      |
3. Result and Discussion

3.1 Availability of Service Facilities

The first service facility available in Kecamatan Purbalingga is an Education Service Facility, a basic facility that must be present to meet the needs of the community to obtain equity Education, ranging from education at the level of early childhood to secondary education or college. Purbalingga sub-district after field survey found in the distribution of Kindergarten School (TK) / equivalent as Roudotul Athfal and Busthanul Athfal, Elementary School (SD) / Madrasah Ibtidaiyyah, Junior High School / Madrasah Tasanawiyyah and High School (SMA) /Senior High School.

Educational facilities for kindergarten in Purbalingga District have 21 location points, Primary School / Equivalent 31 point location, First / Secondary School / Equivalent 10 point location and for Senior High School 8 point location.

![Figure 1. Number of Education Facilities](image1.png)

![Figure 2. Service Facilities in Kecamatan Purbalingga](image2.png)

The second facility available in Kecamatan Purbalingga is a Health Service Facility, a tool and / or a place used to carry out health service efforts, whether promotive, preventive, curative or rehabilitative by the central government, local government and / Government of the Republic of Indonesia Number 47 Year 2016.

The Central Government and Local Government are responsible for the availability of Health Service Facilities in order to achieve the highest possible health status, as well as to determine the number and types of Health Service Facilities and the permission to operate in their areas. The existing health facilities in
Purbalingga sub-district are spread over species; Posyandu are 8 point location, Medical Center 21 point location, Maternity Clinic 11 point location, Puskesmas Pembantu 1 point location, Puskesmas 2 point location, Hospital 4 point location, Medical Practice Place 13 point location and Drugstore there are 22 point location.

The third facility is the Economic Services Facility, a facility supporting the activity of economic activity, for the number of economic service facilities in the District Purbalingga consists of; Warung a number of 322 point locations, shops 13 locations point spread around the square purbalingga, Center of Small Business / Market Environment 4 point location, and Commerce Center (Store, Market, Bank, Office, Industry) there is 1 point location in Market area Segamas and surrounding areas, while for the Shopping Center in Purbalingga sub-district does not yet have, for Economic Facilities in this sub-district seems to dominate compared with other facilities, it is increasingly proved that this Sub-district leads to the development into the City Center of Purbalingga District.
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The fourth facility, is a Public Service Facility, which is a facility that is intended for the public interest. The number of public service facilities in Purbalingga sub-district is Multipurpose Building at 7 point location, Cinema Building not found in this district, Local Mosque as much as 41 point location, Masjid Kelurahan 11 point location, Masjid Kecamatan 1 point location, and Playground and Field Park Sports 16 point location.

And the last is the Public Service Facility, is any form of services in the form of public goods or public services which in principle become the responsibility and implemented by government agencies at the center, in the region, and within the State-Owned Enterprises or Regional Owned Enterprises, in the framework of implementation of the provisions of legislation. The number of public service facilities in Purbalingga sub-district is; Kelurahan Office as many as 13 locations, District Office 1 point location, Police Station / Koramil 3 point location, and Waste Disposal Site 3 point location.

Figure 5. Example of Industrial Service Facilities of Industrial Type in Kecamatan Purbalingga

Figure 6. Example of Public Service Facility Type Mosque in District Purbalingga

Figure 7. Example of Public Service Service Facility Type of Village Office in District Purbalingga

(Source: Field Documentation, 2017)
Spacious Room Service Facility in Spatial Planning Area

Based on Spatial Planning (RTRW) Purbalingga District Year 2011-2031 which is contained in Purbalingga District Regulation Number 5 Year 2011 states that in District Purbalingga has an area of 1,473.10 must have Green Open Space (RTH) with the provision of 30% of the area the region. That is Purbalingga District has 441,93 Hectares devoted to RTH. Whereas in Article 89 Paragraph 3 RTRW Purbalingga Regency, RTH is a protected area which is regulated by general provision that is:
1. it is not permissible to utilize a protected area that may alter the function of the protection;
2. it is not allowed to change the function of the area which has been specified as part of the RTH in the urban area; and
3. allowed over function of green open area but not as part of green open space in urban area with condition of composition of green space not change according to RDTR urban area

It is clear that the development of the service room space in Purbalingga sub-district for the next 15 years is not allowed to take from the predetermined area of RTH, so that space that can be utilized in the future will be the rest of the Purbalingga sub-district reduced by the area of RTH Kecamatan Purbalingga , ie the result is a residual area of 957,515 hectares, the remainder of this area is also called the existing space, which can be used for the utilization of social and economic or cultivation needs.

3.2 Minimum Space Requirements for 15 Years

Minimum service requirement of service facility in Purbalingga sub-district, after calculation in accordance with the steps described in the method, then obtained the calculation of space requirement in each type of service facility for the projection of population 15 years to come in Purbalingga sub-district as in Table 2.

The table indicates that for future education service facilities still need space with total space requirement of 218,800 m² or 21.88 hectares, whereas space requirement for health service facility, economy, general and public service, 15 years to come still be fulfilled with space that has been used today, does not become an urgent need to build more of these four service facilities.

In relation to the existing space in Purbalingga sub-district, the space requirement for the next 15 years as a part of social and economic needs needs to be regulated in more detail along with other social and economic needs, such as the amount of land for settlements, walking in harmony and sustained.
| No. | Facilities Group and Facility Type | JP Population 15 years will come | Threshold | Projection Requirement | Availability | JT F | Standard Minimum Space Requirement (m²) | Space Requirement (m²) |
|-----|----------------------------------|----------------------------------|-----------|------------------------|--------------|-----|----------------------------------------|-----------------------|
| A   | EDUCATION                        |                                  |           |                        |              |     |                                       |                       |
| 1.  | Kindergarten                     | 59,0                             | 1.08      | 69,36                  | 5            |     | 1,250                                  | 55                    | 21 | 34 | 1,200 | 40,800   |
| 2.  | Primary School                   | 59,0                             | 1.08      | 69,36                  | 5            |     | 1,600                                  | 43                    | 31 | 12 | 1,500 | 18,000   |
| 3.  | Junior High School               | 59,0                             | 1.08      | 69,36                  | 5            |     | 4,800                                  | 14                    | 10 | 4  | 10,000| 40,000   |
| 4.  | Senior High School               | 59,0                             | 1.08      | 69,36                  | 5            |     | 4,800                                  | 14                    | 8  | 6  | 20,000| 120,000  |
| B   | HEALTH                           |                                  |           |                        |              |     |                                       |                       |
| 1.  | Posyandu                         | 59,0                             | 1.08      | 69,36                  | 5            |     | 1,250                                  | 55                    | 8  | 47 | 0     | 0           |
| 2.  | Medical Center                   | 59,0                             | 1.08      | 69,36                  | 5            |     | 2,500                                  | 28                    | 21 | 7  | 300   | 2,100     |
| 3.  | Maternity Clinic                 | 59,0                             | 1.08      | 69,36                  | 5            |     | 30,000                                 | 2                     | 11 | -9 | 1,600 | -14,400   |
| 4.  | Puskesmas auxiliary              | 59,0                             | 1.08      | 69,36                  | 5            |     | 30,000                                 | 2                     | 1  | 1  | 500   | 500        |
| 5.  | Puskesmas                        | 59,0                             | 1.08      | 69,36                  | 5            |     | 120,00                                 | 0                     | 2  | -1 | 650   | -650       |
| 6.  | Hospital                         | 59,0                             | 1.08      | 69,36                  | 5            |     | 240,00                                 | 0                     | 4  | -4 | 86,400| -345,600  |
| 7.  | Doctor Practice Place            | 59,0                             | 1.08      | 69,36                  | 5            |     | 5,000                                  | 14                    | 13 | 1  | 0     | 0           |
| 8.  | Drugstore                        | 59,0                             | 1.08      | 69,36                  | 5            |     | 30,000                                 | 2                     | 4  | -2 | 13,500| -27,000    |
| C   | ECONOMY                          |                                  |           |                        |              |     |                                       |                       |
| 1.  | Stores / Stalls                  | 59,0                             | 1.08      | 69,36                  | 5            |     | 250                                    | 277                   | 322 | 45 | 100   | -4,500     |
| 2.  | Shop                             | 59,0                             | 1.08      | 69,36                  | 5            |     | 6,000                                  | 12                    | 12 | -1 | 1,200 | -1,200     |
| 3.  | Environmental Shopping           | 59,0                             | 1.08      | 69,36                  | 5            |     | 30,000                                 | 2                     | 4  | -2 | 13,500| -27,000    |
| Center / Small Market | Store, Market, Bank, Office, Industry | 59,01 42 08 5 | 120.00 0 | 1 1 0 | 36,000 0 |
|----------------------|--------------------------------------|-----------------|----------|--------|-----------|
| 4. Commercial Center | Shopping Center | 59,01 42 08 5 | 340.00 0 | 0 0 0 | 96,000 0 |
| D. GENERAL | Multipurpose Building | 59,01 42 08 5 | 120.00 0 | 1 7 -6 | 3,000 -18,000 |
| | Cinema Building | 59,01 42 08 5 | 120.00 0 | 1 0 1 | 2,000 2,000 |
| | Local Mosque | 59,01 42 08 5 | 2,500 28 41 - | 600 -7,800 |
| | Mosque of Kelurahan Masjid Kecamatan | 59,01 42 08 5 | 30,000 2 11 -9 | 3,600 -32,400 |
| | Playgound and Sports Field | 59,01 42 08 5 | 480.00 0 | 0 16 - | 0 0 |
| E. PUBLIC SERVICE | Office of Kelurahan | 59,01 42 08 5 | 30,000 2 13 - | 1,000 -11,000 |
| | District Office | 59,01 42 08 5 | 120.00 0 | 1 1 0 | 25,000 0 |
| | Police Office / Koramil | 59,01 42 08 5 | 120.00 0 | 1 3 -2 | 1,000 -2,000 |
| | Temporary Waste Disposal Site | 59,01 42 08 5 | 120.00 0 | 1 3 -2 | 1,000 -2,000 |

Source: Data Survey Field 2017
Conclusion and Recommendation

Evaluation of space needs of service facility to meet demographic bonus in Purbalingga District by looking at the availability of existing service facility, availability of existing land area from RTRW Purbalingga Regency, and projection of service facility need space for 15 years which will show the result of education service facility to welcome bonus demography still needs space requirement, while for health service facility, economy, general and public service is not needed urgency of addition of space requirement because existing at this time still able to fulfill requirement of 15 years to come.

Suggestion after the holding of this research, it becomes important to create Detailed Spatial Plan especially for Purbalingga Subdistrict, which is derived from Purbalingga Regency Spatial Planning, since this sub district becomes the center of activity in Purbalingga District, so that the existing development planning becomes more planned and sustainable in the future.

Acknowledgements

The completion of the results of thought in this study is not independent of funding from DIPA Directorate of Strengthening Research and Development Ministry of Research, Technology and Higher Education of the Republic of Indonesia, permission from the University of Muhammadiyah Purwokerto, then assistance data information from Mr. Budi and Mrs. Tutut Gustama from the Department of Public Works and Spatial Planning of Purbalingga Regency, and support of field survey personnel conducted by three students from Geography Education Faculty of Muhammadiyah University of Purwokerto namely Agung Pri Aji, M Wahyu Pratama and Agus Setiawan.

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