STUDYING THE DEVELOPMENT OF EDUCATION INFRASTRUCTURE’S SPATIAL PLAN AT KENDARI

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Abstract
The study aims to: 1) analyze accessibility and mobility factors the planned development of educational facilities in Kendari City; 2) analyze strategy for planning the development of educational facilities for the next 10 years in Kendari City. The type of study is descriptive qualitative and quantitative research, carried out in all high schools and vocational schools in Kendari City totaling 30 schools spread over 10 subdistricts. The results show that: i). The closest distance to reach educational facilities is 579.091 meters, while the farthest is 175,236,993 meters; ii). The highest accessibility value classifications are 13, 11, and 10, moderate classification 8, 7, and 6, while the lowest classification is 5, 4, and 3; iii). The priority for improving educational facilities in the next 10 years, namely in 2021 requires 44 units; in 2022 46 units; in 2023 47 units; in 2024 48 units; in 2025 49 units; in 2026 50 units; in 2027 52 units; in 2028 53 units; and in 2029 54 units. The closest distance to reach educational facilities is SMA Negeri 4 Kendari using 2-wheeled vehicles from the city center, while the farthest distance is SMA Negeri 8 Kendari. The classification of the highest level of accessibility is Baruga District, Wua-Wua, West Kendari. Meanwhile, Puwatu, Kadia, Kambu and Abeli Districts are classified as the lowest. The priority areas for improving vocational education facilities for the next 10 years are in Kambu District 1 unit, Baruga 1 unit, Puwatu 1 unit and Poasia 1 unit. While the high school level is Mandonga District 1 unit, Poasia 1 unit, Kambu 1 unit, Puwatu 1 unit. The Districts of Wua-Wua, West Kendari and Kadia do not require additional educational facilities until 2029.

Keywords: Plans, accessibility, mobility, needs, educational facilities’ development

INTRODUCTION
Education development efforts carried out have an international foundation and commitment, as well as the common vision of various countries in the world known as the Dakkar-Senegal agreement in 2000. The agreement is implemented in the EFA (Education for All) agreement, covering six important components, namely 1) PAUD Education (Early Childhood Education); 2) Primary Education; 3) Literacy Education; 4) Life Skills Education; 5) Gender Equality and Justice; and 6) Improving the quality of education.

In line with the vision and mission of national development as outlined in the RPJPN in 2005-2025, realizing an independent, advanced, fair and prosperous Indonesia, and realizing a competitive nation (Kendari’s Agency for Regional Development, 2007). This is aligned with the vision of the government for the period 2015-2019, namely realizing a sovereign, independent and personality-based Indonesia based on teamwork (Gotong royong) which is poured into 9 development priority agendas (Nawacita) and 31 action programs. One of them is the 5th Nawacita agenda, which is to improve the quality of life of Indonesian people. The competitiveness of a nation can be improved through the development of education. The Human Development Index (HDI) shows Indonesia’s ranking which has decreased since 1995, which is ranked 104th. In 2000 it was ranked 109th, in 2002 ranked 110th, in 2004 ranked 111th, and in 2005 ranked 110th (Sa’ud, 2005). This indicates the problem of equalization and
expansion of access to education in our country which results in low quality of human resources.

Population increase means an increase in the number of school-age children each year. Thus, the addition of physical, facilities is a very meaningful challenge in the future. Accessibility factors are expected to affect the utilization of educational facilities by the community. One way that must be done to improve the quality of education is the provision of educational facilities in accordance with national standards of education. Article 45 of Law No. 20 of 2003 states that each unit of education provides facilities and infrastructure that meet the needs of education in accordance with the growth and development of physical potential, intellectual intelligence, social, emotional, and psychiatric learners.

The national standard of basic and secondary education facilities and infrastructure has been regulated in Permendikbud Number 24 of 2007 on Standards of elementary, junior high, high school or equivalent facilities and infrastructure, regulating the units of education, land, buildings, as well as facilities and infrastructure provisions. Similarly, in the Kendari City RTRW in 2000-2010, establishing three priority plan factors for the development of the Kendari City area, namely 1) The population density of each region in accordance with its development; 2) The mobility of the population judging by its growth rate; 3) Availability of residential facilities/ utilities that show the level of service efficiency is associated with population density (Kendari’s Department of Public Works, 2000). The plan for the development of educational facilities is prioritized spread following the distribution of residential areas. The location of educational facilities is expected to be in an optimal distance to residential areas or residential areas, so that students do not need a long distance to reach educational facilities (Kendari’s Agency for Regional Development, 2007).

As a consequence of the growth and development of the population and the city, demographics are changing and the need for space continues to increase, it is as illustrated in the Kendari City RTRW in 2000-2010 to the estimated needs of the development of high school and public and private vocational education facilities in Kendari City of 23 units with a land area of 22.62 ha (Kendari’s Department of Public Works, 2000). The amount of population to be served by a facility will differ based on the level (Hierarchy). The higher the hierarchy / facilities the number of supporting population is large, so that the facilities built spread unevenly every region.

The increase in the number of residents of a region (regency / city) needs to be projected, so that it can be determined the needs of educational facilities / facilities and when using indicators in accordance with the provisions issued through the Decree of the Minister of Pu Number: 378 / KPTS / 1087 on the Ratification of 33 Standards of Indonesian Building Construction, determined 1 elementary school serves 1,600 residents, 1 SLTP serves 3 elementary school, and 1 SLTA serves 3 SLTP or 4,800 residents (Directorate General of Public Works, 1992). Further explained that the standard of facilities for secondary education units in accordance with The Minister of Education Regulation No. 24 of 2007 that: 1) The minimum supporting population for facilities is 6,000 residents; 2) The minimum consists of 3 learning groups and a maximum of 27 learning groups; 3) The minimum area of land needed is 2,170 m².

When referring to the above indicators, the need for the development of educational facilities for population growth in Kendari City can be projected. In 2020 the population of
Kendari City amounted to 315,097 people with an area of 266,958 km², it requires 65 units of high school / vocational education facilities development (Kendari’s Statistics, 2020).

The performance of improving access to education in Kendari City has not been in accordance with the improvement of the development of educational facilities, it is still characterized by low Gross Participation Rate (APK) and Pure Participation Rate (APM) of high school and vocational level. In 2008, Kendari City APK amounted to 88.03 and APM 80.45. The highest APK is in Kadia District at 238.68 and the lowest in Kambu District at 3.63. This shows that efforts to increase the equalization of education and expand access to education in Kendari City have not been successful. The higher the APK means that more and more school-age children who attend school in an area / more and more children of age outside a certain school age group attend a certain level of education. Many school ages beyond the official school age, students come from other areas, urban areas, or border areas (Dundu, 2008).

The construction of educational facilities is an integral part of the construction of other non-physical facilities. School construction is not enough to just build a school building but it is necessary to consider other supporting components, including the number of educators (teachers), the number of students and the ratio of comparisons. Based on data on the number of schools, teachers, students and student ratios per teacher in Kendari City in 2010, from 30 units of high school and vocational school with the number of teachers 909 people and students 13,969, the total ratio of students per teacher is 1: 15. This shows that there are some districts that have the highest, medium and low ratios. A high ratio then needs the construction of non-physical facilities, namely the increase in the number of teachers, while the moderate and low ratio is the construction of physical facilities / educational facilities. The improvement of the development of educational facilities in Kendari City is also influenced by the gap between the capacity and the needs of available educational facilities. Based on data from Bappeda Kendari City in 2010 showed from the number of 30 units of high school and vocational school in Kendari City with the number of teachers 909 people, 13,696 students and 358 classes, there were 264 learning groups. The large number of rombels does not necessarily reflect the large number of classes, and vice versa. So, from the total number of rombel of 264 it still requires 24 units of development of educational facilities / new school units.

Therefore, when associated with the Decree of the Minister of Pu Number: 378 / KPTS / 1987 on the Ratification of 33 Standards of Indonesian Building Construction, according to data on the number of residents and area in Kendari City in 2020 then there should be 65 units of SMA / SMK, but in fact until now there are only 30 units, so there is still a shortage of 35 units. In addition, the ratio of students per class at the high school and vocational level averages 47 people per class, so that with SPM which is 37 students per class, the ratio of students per class at the main high school and public and private vocational levels in Kendari City has not reached the minimum service standard ratio, so each is needed to build more adequate and optimal educational facilities.

Therefore, the study focuses on the level of accessibility and mobility of the population in achieving educational means. The level of accessibility is the ease of reaching another location around it (Tarigan, 2008). Furthermore, Tarigan (2008) stated that the level of accessibility is influenced by distance, transportation infrastructure conditions, availability of various facilities including frequency and level of security, and comfort through the route (Budiharsono, 2001).
The value of accessibility is considered influential because the higher the value, the denser or more roads there are in a region, so it is easier for someone to do mobility (Glasson, 1997). The formulation of this research problem is: 1) Is the accessibility and mobility factor considered in the plan for the development of educational facilities in Kendari City?; and 2) what is the strategy of the development plan for the next ten years of educational facilities in Kendari City?

METHOD
This research uses qualitative and quantitative descriptive analysis techniques. Data is analyzed and transcribed to provide an overview or reveal a problem or circumstance with aids, matrix tables, frequencies and percentages. Quantitative analysis using the analysis of service areas (isoline) by Riyadi and Bratakusumah (2003), with loci throughout high schools and public and private vocational schools, amounted to 30 schools spread across 10 sub-districts in Kendari City. For the sake of supporting information, it takes an informant as a source of information relevant to the research problem. Data collection techniques use observation techniques, structured interviews, and various documents and documentation, in the form of reports, literature, thematic maps, etc.

RESULTS AND DISCUSSION
Accessibility and mobility considerations
Service Range
1) Calculate the Mt Time Limit maximum mileage and travel time, with the formula:
   \[ J_{pr} (m) = \frac{Mtx}{T} \] or \[ (Mtx:T) \times Jt \] ......................................................... \( (1) \)

   Description:
   Range of real services (Jpr)
   \( J_{pr} (m) = 175,236,993 \) meters or 17,523 km.

   The closest mileage of the educational facilities service range is 597,091 meters or 0.597 km from the city center, namely high school and vocational school Kendari state using two-wheeled vehicles. While the furthest is 175,263,993 meters or 17,523 km from the city center to 8 Kendari State High School. This fact shows that the standard range of educational facilities development services in Kendari City has not been in accordance with the provisions of the standard range of service, the maximum high school is 7,000 meters (Riyadi & Bratakusumah, 2003). Likewise, the standard location of residential distance with SLA education infrastructure is 1 1/2 km by foot (Jayadinata, 1999). In contrast to travel time with city analysis that the standard distance of residence with SLA education infrastructure is 20 minutes by foot (Jayadinata, 1999).

2) Converts the range of rill into a map (time to distance), with the formula:
   \[ J_{pr}: Mt \times \frac{Jt}{km} \] ......................................................... \( (2) \)

   The nearest travel time according to the range of rill service (Jpr) in the map is 0.6 minutes/ km using motor vehicles from the city center to SMA Negeri 4 Kendari and SMK Negeri 1 Kendari. While the furthest travel time is 1,106,948 minutes/km from the city center to 8 Kendari State High School. This shows that the travel time needed to reach the services of high school/vocational education facilities in Kendari City has not
been in accordance with the standard provisions of real service coverage travel time (Jpr) the construction of educational facilities for high school 5.00 minutes/km using bicycles and motor vehicles 1.43 minutes/km (Riyadi & Bratakusumah, 2003).

Accessibility Value
Analysis of the level of accessibility of educational facilities development using data on road length and area of sub-district, with the following steps: a) Determining the road length; b) Giving weight to the road according to the class of roads, i.e. national roads/arteries, provincial roads, and city roads; c) Calculate the weight and length of roads; d) Calculate accessibility values (NA), i.e. results weights and lengths of the road by area; and e) Classify accessibility values, i.e. group accessibility values into 3 classes using interval values 2.

Table 1. Calculation of The Value of Accessibility of Level Educational Facilities High School and Vocational School in Kendari City in 2020

<table>
<thead>
<tr>
<th>No</th>
<th>District</th>
<th>Length of Road (Km)</th>
<th>Weight x Length of Road (Km2)</th>
<th>Area (Km2)</th>
<th>NA (Long Road)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kendari</td>
<td>33,18</td>
<td>119</td>
<td>14,48</td>
<td>8</td>
<td>Keep</td>
</tr>
<tr>
<td>2</td>
<td>Kendari Barat</td>
<td>55,1</td>
<td>220</td>
<td>42,233</td>
<td>5</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>Mandonga</td>
<td>45,28</td>
<td>181</td>
<td>21,74</td>
<td>8</td>
<td>Keep</td>
</tr>
<tr>
<td>4</td>
<td>Puwatu</td>
<td>51,28</td>
<td>205</td>
<td>43,51</td>
<td>5</td>
<td>Low</td>
</tr>
<tr>
<td>5</td>
<td>Baruga</td>
<td>91,73</td>
<td>367</td>
<td>49,41</td>
<td>7</td>
<td>Keep</td>
</tr>
<tr>
<td>6</td>
<td>Wua-Wua</td>
<td>40,89</td>
<td>164</td>
<td>10,79</td>
<td>15</td>
<td>Tall</td>
</tr>
<tr>
<td>7</td>
<td>Kadia</td>
<td>38,28</td>
<td>153</td>
<td>35,00</td>
<td>4</td>
<td>Low</td>
</tr>
<tr>
<td>8</td>
<td>Kambu</td>
<td>25,7</td>
<td>103</td>
<td>22,10</td>
<td>5</td>
<td>Low</td>
</tr>
<tr>
<td>9</td>
<td>Poasia</td>
<td>85,07</td>
<td>340</td>
<td>38,08</td>
<td>8</td>
<td>Keep</td>
</tr>
<tr>
<td>10</td>
<td>Abel</td>
<td>34,17</td>
<td>137</td>
<td>50,49</td>
<td>3</td>
<td>Low</td>
</tr>
</tbody>
</table>

Source: Data Processed Results 2020

Based on the data, there are 3 classifications of accessibility levels of high school and vocational education facilities in Kendari City, as follows: 1) Classification of accessibility values, namely Wua-Wua District 15; 2) Classification of medium accessibility values, namely Kendari District 8, Mandonga District 8, Poasia District 8, Kematan and Baruga District 7; 3) The lowest accessibility value classification, namely West Kendari District 5, Puwatu District 5, Kambu District 5, Kadia District 4, and Abeli District 3. The higher the value of accessibility, the denser, or the more roads a particular region uses, making it easier for someone to do activities. Accessibility value is considered influential because the higher the value, the denser or more roads there are in a region so it is easier for someone to do mobility.

Distribution Patterns
Distribution pattern is the conformity between the capacity of the number of schools (Supply) and the needs of the school (Demand). School capacity is calculated based on the standard number of students per class as well as the number of students per teacher. Meanwhile, the needs of school calculated from the number of residents of high school and vocational age (16-18 years).
Facts show the average number of students per class at high school and vocational level in Kendari City is 42-47 people per class, so by looking at SPM which is 37 students per class, then the average number of students at the level of the school has exceeded SPM in the field of
education. To clarify the concept, outlined the capacity of the school according to the ideal standard ratio of Peddiknas at the high school and vocational level as follows.

Table 2. Capacity of High School and Vocational Education Public and Private in Kendari City 2016

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>School</th>
<th>Teachers</th>
<th>Pupil</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kendari</td>
<td>3 Unit</td>
<td>76</td>
<td>1.165</td>
<td>30</td>
</tr>
<tr>
<td>2.</td>
<td>Kendari Barat</td>
<td>7 Unit</td>
<td>226</td>
<td>3.084</td>
<td>75</td>
</tr>
<tr>
<td>3.</td>
<td>Mandonga</td>
<td>2 Unit</td>
<td>46</td>
<td>565</td>
<td>14</td>
</tr>
<tr>
<td>4.</td>
<td>Puwatu</td>
<td>2 Unit</td>
<td>52</td>
<td>710</td>
<td>18</td>
</tr>
<tr>
<td>5.</td>
<td>Baruga</td>
<td>1 Unit</td>
<td>63</td>
<td>892</td>
<td>21</td>
</tr>
<tr>
<td>6.</td>
<td>Wua-Wua</td>
<td>6 Unit</td>
<td>205</td>
<td>1.291</td>
<td>32</td>
</tr>
<tr>
<td>7.</td>
<td>Kadia</td>
<td>5 Unit</td>
<td>314</td>
<td>4.798</td>
<td>119</td>
</tr>
<tr>
<td>8.</td>
<td>Kambu</td>
<td>0 Unit</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.</td>
<td>Poasia</td>
<td>3 Unit</td>
<td>179</td>
<td>1.744</td>
<td>41</td>
</tr>
<tr>
<td>10.</td>
<td>Abel</td>
<td>1 Unit</td>
<td>33</td>
<td>339</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Sum</td>
<td>30 Unit</td>
<td>1,192</td>
<td>13,696</td>
<td>358</td>
</tr>
</tbody>
</table>

Source: Bappeda Kota Kendari, 2016

The data shows the capacity of the number of students per class and the number of students per teacher depending on the capacity of the availability of educational facilities (Schools). Under certain conditions there is limited classroom capacity but the number of students is large while the number of teachers is limited. Therefore, there needs to be an ideal standard as a basic reference in determining the capacity of educational facilities. Based on the data, outlined the comparison of the capacity of the number of educational facilities with the ideal standards of high school and vocational school level in Kendari City as follows.

Table 3. Comparison of School Ratio with Ideal Standards Public and Private High School and Vocational School in Kendari City in 2016

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Student Ratio per School</th>
<th>Student ratio per class</th>
<th>Student Ratio per Teacher</th>
<th>Class Ratio Per Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kendari</td>
<td>1 : 388,33</td>
<td>1 : 39</td>
<td>1 : 15,33</td>
<td>0,26</td>
</tr>
<tr>
<td>2.</td>
<td>Kendari Barat</td>
<td>1 : 440,57</td>
<td>1 : 41,12</td>
<td>1 : 13,77</td>
<td>0,44</td>
</tr>
<tr>
<td>3.</td>
<td>Mandonga</td>
<td>1 : 282,5</td>
<td>1 : 40,36</td>
<td>1 : 12,28</td>
<td>0,26</td>
</tr>
<tr>
<td>4.</td>
<td>Puwatu</td>
<td>1 : 355</td>
<td>1 : 39,44</td>
<td>1 : 13,65</td>
<td>1,8</td>
</tr>
<tr>
<td>5.</td>
<td>Baruga</td>
<td>1 : 892</td>
<td>1 : 42,48</td>
<td>1 : 14,16</td>
<td>0,28</td>
</tr>
<tr>
<td>6.</td>
<td>Wua-Wua</td>
<td>1 : 258,2</td>
<td>1 : 40,34</td>
<td>1 : 6,30</td>
<td>0,26</td>
</tr>
<tr>
<td>7.</td>
<td>Kadia</td>
<td>1 : 959,6</td>
<td>1 : 40,42</td>
<td>1 : 15,28</td>
<td>0,59</td>
</tr>
<tr>
<td>8.</td>
<td>Kambu</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.</td>
<td>Poasia</td>
<td>1 : 581,33</td>
<td>1 : 42,54</td>
<td>1 : 9,74</td>
<td>0,41</td>
</tr>
<tr>
<td>10.</td>
<td>Abel</td>
<td>1 : 339</td>
<td>1 : 42,38</td>
<td>1 : 10,27</td>
<td>0,5</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>1 : 402,82</td>
<td>1 : 38,26</td>
<td>1 : 11,49</td>
<td>0,39</td>
</tr>
<tr>
<td></td>
<td>Ideal Standards</td>
<td>1 : 360</td>
<td>1 : 37</td>
<td>1 : 21</td>
<td>0,42</td>
</tr>
</tbody>
</table>

Source: 2016 Processed Data Results

The ratio of students per school indicates a fairly high score, compared to the ideal ratio/should be 1:360. This shows the increasingly dense number of students attending school or the lack of availability of educational facilities at the high school and public and private vocational levels in the region. The higher the ratio means the denser students in the school, or the less the number of schools in an area. The ratio of students per class shows a ratio that is high enough or above the ideal standard/should be 1:37. This means that the denser the number of students in the classroom or the less the number of classrooms available in high school and vocational school in Kendari City. The higher the ratio means the denser the students in the classroom or the less
the number of classrooms in an area. The ratio of students per teacher shows a ratio that is low enough or not reached the ratio that should be 1:21. This shows that the lower number of students a teacher has to serve, then the more teachers that teach in a region. The higher the ratio means the bigger number of students a teacher must serve in a given region. Meanwhile, the class-to-teacher ratio shows a very low ratio, or does not reach the standard that should be 0.42. This means that more teachers are teaching in the classroom compared to the capacity of the number of classes available at the state and private high school and vocational schools in Kendari City.

The need for the number of schools (Demand) is analyzed from the number of school-age residents and the number of school-age students (16-18 years), such as the following table.

Table 3. Gross Participation Figures (APK) and Pure Participation Rate (APM) of High School and Vocational School in Kendari City in 2016

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>People aged 16-18</th>
<th>Students of &lt;16</th>
<th>Students Ages 16-18</th>
<th>Students &gt; 18</th>
<th>Sum</th>
<th>MOT</th>
<th>APM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kendari</td>
<td>1.586</td>
<td>20</td>
<td>961</td>
<td>127</td>
<td>1.108</td>
<td>69.86</td>
<td>60.59</td>
</tr>
<tr>
<td>2.</td>
<td>Kendari Barat</td>
<td>2.633</td>
<td>322</td>
<td>2.811</td>
<td>26</td>
<td>3.159</td>
<td>119.98</td>
<td>106.76</td>
</tr>
<tr>
<td>3.</td>
<td>Mandonga</td>
<td>2.243</td>
<td>17</td>
<td>711</td>
<td>61</td>
<td>789</td>
<td>35.18</td>
<td>31.69</td>
</tr>
<tr>
<td>4.</td>
<td>Puwatu</td>
<td>1.428</td>
<td>138</td>
<td>605</td>
<td>23</td>
<td>766</td>
<td>53.64</td>
<td>42.37</td>
</tr>
<tr>
<td>5.</td>
<td>Baruga</td>
<td>789</td>
<td>32</td>
<td>806</td>
<td>0</td>
<td>836</td>
<td>104.76</td>
<td>101.00</td>
</tr>
<tr>
<td>6.</td>
<td>Wua-Wua</td>
<td>1.244</td>
<td>25</td>
<td>1.235</td>
<td>3</td>
<td>1.263</td>
<td>101.53</td>
<td>99.28</td>
</tr>
<tr>
<td>7.</td>
<td>Kadia</td>
<td>1.758</td>
<td>170</td>
<td>3.898</td>
<td>128</td>
<td>4.196</td>
<td>238.68</td>
<td>221.73</td>
</tr>
<tr>
<td>8.</td>
<td>Kambu</td>
<td>1.240</td>
<td>0</td>
<td>38</td>
<td>7</td>
<td>45</td>
<td>3.63</td>
<td>3.06</td>
</tr>
<tr>
<td>9.</td>
<td>Poasia</td>
<td>1.200</td>
<td>35</td>
<td>1.450</td>
<td>18</td>
<td>1.503</td>
<td>125.25</td>
<td>120.83</td>
</tr>
<tr>
<td>10.</td>
<td>Abel</td>
<td>1.315</td>
<td>0</td>
<td>399</td>
<td>14</td>
<td>413</td>
<td>31.41</td>
<td>30.34</td>
</tr>
<tr>
<td>Sum</td>
<td></td>
<td>15.446</td>
<td>759</td>
<td>11.953</td>
<td>407</td>
<td>13.119</td>
<td>84.93</td>
<td>77.39</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ideal Standards</th>
<th>100%</th>
<th>Close to 100%</th>
</tr>
</thead>
</table>

Source: 2016 Results of Processed Data

The value of APK and APM high school and public and private vocational school in Kendari City is still very low compared to the ideal standard of 100%. This indicates that many groups of children aged <16, 16-18 and >18 years old are not in school, drop out of school or are unable to continue school at high school and vocational school. In general, indicators of the success of educational programs in an area are measured from APK and APM values. Therefore, in that context indicates the implementation of education programs in Kendari City is still not successful. However, there are some areas showing APK and APM values beyond or above the ideal standard. This means that many children aged 16-18 years of school in the region, or many children of age outside certain school age groups attend private high school and vocational school in Kendari City. High APK scores indicate many children outside the official student age of school, students come from other areas, urban areas or border areas.

**Site Conditions**

Site conditions, namely environmental activities or the suitability of school locations are reviewed from applicable standards or can be applied in Indonesia regarding land use and environmental activities that are harmful, negatively impacted or does not support the educational process. This is supported by the results of an interview with the Kendari City’s Head of Department of Education, Drs. Kasman Arifin, on September 1, 2016, that the location of high school and state vocational school in Kendari City is not in accordance with planning.
Similarly, in the interview with the Chairman of the Kendari City Education Committee, Drs. H. Akib Thalha, September 3, 2016, he stated that the location of high school and vocational school placements in Kendari City has not been in accordance with the results of the analysis. Meanwhile, referring to the provisions of Permenindiknas No. 24 of 2007 that the construction of high school/vocational education facilities, must meet: 1) The minimum ratio of land area; 2) Have a learning group; 3) Land use for buildings and playgrounds/sports; 4) Land avoids potential hazards that threaten health and safety, and has emergency access; 5) The average slope of land <15%, not within the border lines of rivers and railways; 6) Land avoids water pollution disturbances, noise, and air pollution; 7) Land in accordance with the designation of the location and obtain land use permits from the local government; 8) The land has land rights status and have a minimum term of 20 years. The area of land needed for the development of educational facilities in accordance with these provisions, which is 2,170 m².

Education Facilities Development Strategy for the Next Ten Years

Analysis of Numbers and Growth

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Year</th>
<th>Fast Growth Per year (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Kendari Barat</td>
<td>2018: 54,884</td>
<td>2019: 44,684</td>
</tr>
<tr>
<td>3</td>
<td>Mandonga</td>
<td>2018: 46,235</td>
<td>2019: 38,509</td>
</tr>
<tr>
<td>4</td>
<td>Piuwatu</td>
<td>2018: 35,478</td>
<td>2019: 38,502</td>
</tr>
<tr>
<td>5</td>
<td>Baruga</td>
<td>2018: 24,762</td>
<td>2019: 31,099</td>
</tr>
<tr>
<td>6</td>
<td>Wua-Wua</td>
<td>2018: 31,205</td>
<td>2019: 31,912</td>
</tr>
<tr>
<td>7</td>
<td>Kadia</td>
<td>2018: 50,175</td>
<td>2019: 38,062</td>
</tr>
<tr>
<td>8</td>
<td>Kambu</td>
<td>2018: 34,693</td>
<td>2019: 23,219</td>
</tr>
<tr>
<td>10</td>
<td>Abel</td>
<td>2018: 17,527</td>
<td>2019: 17,003</td>
</tr>
<tr>
<td>Sum</td>
<td></td>
<td>2018: 370,728</td>
<td>2019: 340,796</td>
</tr>
</tbody>
</table>

Source: Kendari City in 2020 (Kendari’s Statistics, 2020)

The population growth rate of Baruga, Poasia, and Abeli districts is above the population rate of Kendari City, which is consecutive with figures of 5.36 percent, 4.83 percent and 4.73 percent. While the rate of population growth in the other 8 districts is relatively low. This shows the uneven distribution of population in each region, and from the aspect of space means to impose a burden on the use of land / location, both residential and the need to use educational facilities.

The population growth of a region needs to be projected, so that it can be estimated the number of educational facilities development needs, and when using indicators in accordance with the provisions of the Minister of Pu Decree No. 378 / KPTS / 1987 concerning the Ratification of 33 Standards of Indonesian Building Construction, where 1 SLTA serves 3 SLTP or 4,800 residents, it can be seen in the following table.

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Projected Population</th>
</tr>
</thead>
</table>
The distribution of the population is uneven in every district in Kendari City. Population growth at some points of the region shows a fairly high trend, such as West Kendari District, Puwatu, Poasia, and Mandonga Subdistrict. In the aspect of space, population growth means causing a burden on the use of land / location both residential and facilities development needs.

In the growth of the population, it is necessary to consider the needs of the development of educational facilities, especially high school and vocational school in Kendari City, as seen in the following table.

Table 6. Needs for The Development of High School and Vocational Education Facilities in Kendari City 2020-2029

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Projected Population</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2020</td>
<td>2021</td>
</tr>
<tr>
<td>1.</td>
<td>Kendari</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>2.</td>
<td>Kendari Barat</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>3.</td>
<td>Mandonga</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>4.</td>
<td>Puwatu</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>5.</td>
<td>Kambu</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>6.</td>
<td>Wua-Wua</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>7.</td>
<td>Kadia</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>8.</td>
<td>Kambu</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>Poasia</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>10.</td>
<td>Abel</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>11.</td>
<td>Nambo</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sum</td>
<td></td>
<td>72</td>
<td>74</td>
</tr>
</tbody>
</table>

Source: Data Analysis and Processing Results 2020

The data shows that the need for high school and vocational education development in Kendari City is not evenly distributed, there are certain areas of higher education facilities development needs and vice versa very low. The need for the development of higher educational facilities, such as Puwatu, Poasia, Baruga, West Kendari, Wua-Wua, Kadia, and Mandonga. While Kendari, Kambu, Abeli and Nambo districts are districts where the level of educational development needs is relatively low. Based on existing data (existing educational facilities), the addition of the needs of high school and vocational education facilities in Kendari City, as the following table.

Table 6. Needs for The Development of High School and Vocational Education Facilities in Kendari City in 2020-2029

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Existing</th>
<th>Projected Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kendari</td>
<td>3 Unit</td>
<td>(3) (3) (3) (3) (3) (3) (3) (3) (3) (3) (4)</td>
</tr>
</tbody>
</table>

Source: Data Analysis and Processing Results 2020

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Studying the Development of Education Infrastructure’s Spatial Plan at Kendari

The development of high school and vocational school education facilities in Kendari City is uneven, there are certain areas of development of educational facilities exceeding the standard of needs that should be. Conversely, there are areas that require additions and even do not even have at all, such as Kambu District requires 5 units and Nambo 2 units in 2020-2024.

There are several points of the region that require priority of the development of educational facilities in 2020-2029 high school and vocational level in Kendari City, namely: 1) Year 2021-2022 Kambu District and Nambo SMK each 1 unit, Baruga Sma District 1 unit; 2) Year 2023-2024 District Puwatu SMK 1 unit and Poasia Subdistrict SMK 1 unit; 3) Year 2025-2026 Mandonga Sma District 1 unit and Kendari District SMK 1 unit; 4) Year 2027-2028 District Poasia SMA 1 unit, Abeli SMA 1 unit and Nambo SMA 1 unit; 5) Year 2028-2029 Kambu Subdistrict, Puwatu 1 unit each. While Wua-Wua District, West Kendari, Kendari, Kadia do not need additions until 2029.

Population Density and Distribution Analysis

Population density in Kendari City in 2020 is concentrated in West Kendari District around 44,684 people with a density of 2,116.00 km2, followed by Mandonga District with a population of 38,509 people with a density of 1,171 km2. For more details can be seen at the following table.

Table 7. Number and Population Density Per Km² in Kendari City 2020-2021

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Area (Km²)</th>
<th>Sum Inhabitant Year 2020</th>
<th>Sum Inhabitant Year 2021</th>
<th>Population Density Per Km² Year 2020</th>
<th>Population Density Per Km² Year 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kendari</td>
<td>14,480</td>
<td>29,510</td>
<td>28,580</td>
<td>2.038</td>
<td>1.974</td>
</tr>
<tr>
<td>2.</td>
<td>Kendari Barat</td>
<td>21,120</td>
<td>44,684</td>
<td>42,230</td>
<td>2.116</td>
<td>2.000</td>
</tr>
<tr>
<td>3.</td>
<td>Mandonga</td>
<td>21,740</td>
<td>38,509</td>
<td>37,220</td>
<td>1.717</td>
<td>1.712</td>
</tr>
<tr>
<td>4.</td>
<td>Puwatu</td>
<td>43,510</td>
<td>38,502</td>
<td>40,000</td>
<td>885</td>
<td>919</td>
</tr>
<tr>
<td>5.</td>
<td>Baruga</td>
<td>49,410</td>
<td>31,099</td>
<td>33,290</td>
<td>629</td>
<td>674</td>
</tr>
<tr>
<td>6.</td>
<td>Wua-Wua</td>
<td>10,790</td>
<td>31,912</td>
<td>33,450</td>
<td>2,958</td>
<td>3,100</td>
</tr>
<tr>
<td>7.</td>
<td>Kadia</td>
<td>6,480</td>
<td>38,062</td>
<td>36,610</td>
<td>5,874</td>
<td>5,650</td>
</tr>
<tr>
<td>8.</td>
<td>Kambu</td>
<td>22,100</td>
<td>23,219</td>
<td>24,720</td>
<td>1.051</td>
<td>1.119</td>
</tr>
<tr>
<td>9.</td>
<td>Poasia</td>
<td>42,910</td>
<td>37,158</td>
<td>40,660</td>
<td>866</td>
<td>947</td>
</tr>
<tr>
<td>10.</td>
<td>Abel</td>
<td>13,900</td>
<td>13,003</td>
<td>17,190</td>
<td>1.223</td>
<td>1.236</td>
</tr>
<tr>
<td>11.</td>
<td>Nambo</td>
<td>25,320</td>
<td>340,796</td>
<td>345,110</td>
<td>1.254</td>
<td>1.270</td>
</tr>
</tbody>
</table>

Population concentration is at some point, in 2021 concentrated in West Kendari District population density of 42,230 people with a distribution of 12.24 percent, following Poasia...
District population density of 40,660 people with a distribution of 11.78 percent, and then Puwatu District population density of 40.00 people with a distribution of 11.60 percent.

Table 8. Density and Distribution of Kendari City Population in 2020–2021

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Year 2020</th>
<th>Distribution (%)</th>
<th>Year 2021</th>
<th>Distribution (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kendari</td>
<td>29,510</td>
<td>8.66</td>
<td>28,580</td>
<td>8.28</td>
</tr>
<tr>
<td>3.</td>
<td>Mandongga</td>
<td>38,509</td>
<td>11.30</td>
<td>37,220</td>
<td>10.78</td>
</tr>
<tr>
<td>4.</td>
<td>Puwatu</td>
<td>38,502</td>
<td>11.29</td>
<td>40,000</td>
<td>11.59</td>
</tr>
<tr>
<td>5.</td>
<td>Baruga</td>
<td>31,099</td>
<td>9.13</td>
<td>33,290</td>
<td>9.65</td>
</tr>
<tr>
<td>6.</td>
<td>Wua-Wua</td>
<td>31,912</td>
<td>9.36</td>
<td>33,450</td>
<td>9.69</td>
</tr>
<tr>
<td>7.</td>
<td>Kadia</td>
<td>38,062</td>
<td>11.17</td>
<td>36,610</td>
<td>10.61</td>
</tr>
<tr>
<td>8.</td>
<td>Kambu</td>
<td>23,219</td>
<td>6.81</td>
<td>24,720</td>
<td>7.16</td>
</tr>
<tr>
<td>9.</td>
<td>Poasia</td>
<td>37,158</td>
<td>10.90</td>
<td>40,660</td>
<td>11.78</td>
</tr>
<tr>
<td>10.</td>
<td>Abel</td>
<td>13,003</td>
<td>3.82</td>
<td>17,190</td>
<td>4.98</td>
</tr>
<tr>
<td></td>
<td><strong>Sum</strong></td>
<td>340,796</td>
<td>98.82</td>
<td>345,110</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Kendari City in 2020 (Kendari’s Statistics, 2020)

The main cause of population distribution in some of these regions is a shift in economic activity with many economic facilities built. Access to road infrastructure that connects transportation from one place to another (markets, shopping centers, schools, cities, etc.) is very easy, convenient and fast, so residents are more likely to live and even stay long in the region. Another cause is the number of new support schools. Many students are domiciled outside the area where the school is located, for the reason of looking for a favorite school. Although far away, the transportation within the city is smooth and reaches almost all schools.

CONCLUSION

1) Factors considering accessibility and mobility of the development of high school and vocational education facilities in Kendari City show: a) The nearest mileage of educational facilities services is SMAN 4 Kendari and SMKN 1 Kendari, while the furthest is SMAN 2 and SMAN 8 Kendari; and b) The classification of the highest level of accessibility of educational facilities is in the districts of Baruga, Wua-Wua and Kendari Barat.

2) The strategy of building educational facilities in the next 10 years of high school and vocational school level in Kendari City in 2020-2029 is carried out by distributing the development of educational facilities equally and proportionally according to the needs and population growth rate according to the priority scale, as follows: a) In 2021-2022 Districts Kambu and Nambo SMK each 1 unit, SMA Baruga District 1 unit; b) 2023-2024 SMK District Puwatu 1 unit and SMK Poasia District 1 unit; c) 2025-2026 SMA Mandongga District 1 unit and SMK Kendari District 1 unit; d) 2027-2028 SMA District Poasia 1 unit, SMA Abeli 1 unit and SMA Nambo 1 unit; e) 2028-2029 Kambu Subdistrict, Puwatu each 1 unit. While Wua-Wua District, West Kendari, Kendari, Kadia do not need additions until 2029.

3) The distribution of residents in Kendari City is uneven every region, thus causing a gap between the needs and availability of land development of educational facilities.
REFERENCES


