

# CHARACTERISTICS OF PUBLIC TRANSPORTATION (ANGKOT) AND THEIR PROBLEMS IN BANYUWANGI CITY INDONESIA

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## 1. Introduction

Although public transport is one of the important social facilities, it has many problems such as inadequate and poor quality, mismatch between demand and supply in Indonesia. The deficiencies of urban public transport network cause low spatial accessibility. In Banyuwangi City, East Java Province, micro vans with 12 passenger capacity, so called *angkot*, play an important role of public transportation in urbanized areas. While motorcycles and own private cars are rapidly increasing and number of *angkot* are diminishing. This paper intends to describe and explore the characteristics of public transport (*angkot*) in the Banyuwangi City and their problems as an urban transportation mode.

## 2. Transportation System in Banyuwangi City

### a) Social-Demographics of Banyuwangi

Banyuwangi City is located in the most eastern part of Jawa Island. **Fig. 1** shows the location of Banyuwangi City. The Banyuwangi City administration extends over 2,730 ha that covers 26 villages, *Kelurahan*, within 4 sub-districts. The developed area are 39 % of the city and 61 % are used as agricultural area and empty area. There are 163,037 people in 2006. The population density is 715 inhabitants per square kilometer and the number of households are 44,883. GDP Per Capita Income is Rp. 5,278,627<sup>1)</sup>.

Table 1 Social- demographics and motorization trend in Banyuwangi

Year	Population (person)	GDP per Capita (Rupiah)	Number of Motorcycles (unit)	Number of own cars (unit)	Number of MPU* & Angkot (unit)	No. of bus ** (unit)
2001	1,470,577	3,453,997	128,235	10,741	540	131
2002	1,493,250	3,586,635	144,978	11,417	563	130
2003	1,531,026	3,622,140	163,125	11,828	576	136
2004	1,557,423	3,753,350	187,636	12,405	548	142
2005	1,575,089	5,104,716	217,593	13,431	544	159
2006	1,576,328	5,278,627	229,589	13,801	509	161

\* MPU = *mobil penumpang umum* (public passenger car) which are used out of city

\*\* Buses are run by private enterprises and serve intercity and inter- province

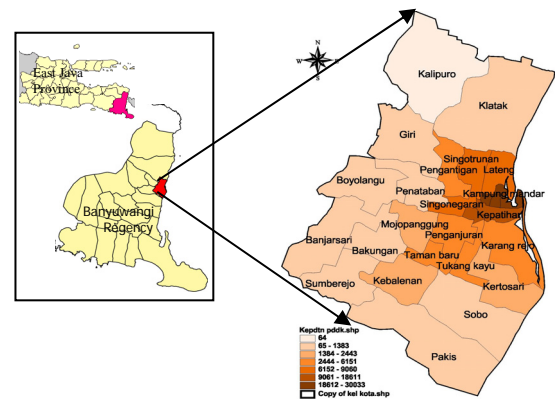


Fig. 1 Location of Banyuwangi City

### b) Transportation System and Public transport

In Banyuwangi City, people are served by several types of public transportation. Unfixed routes are served by taxi, public motorcycle (*ojek*), and rickshaw (*becak*). While fixed routes are served by small vehicles as public passenger car so-called *Angkot* (the acronym of *angkutan kota*) along 11 routes as shown in **Fig. 2**. *Angkot* is a micro van which has been re-designed to accommodate more passengers. All back seats are removed and replaced by two long dark-benches covered with foam. Normally, an *angkot* can carry up to 12 passengers but sometimes drivers carry extra two or even four more persons.

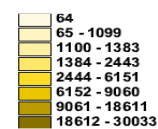
The transportation modes tend to personal vehicles as shown in the right part of **Table 1**. The number of personal vehicles has doubled in the last ten years while public transport remains stagnant or even decrease. The most of low-income households use motorcycles. Leasing system enables many people to buy a motorcycle. Population, income, motorcycles and private cars increase, but the number of *angkot* decreases as shown in **Table 1**.

## 3. Transportation Problem and Discussion

**Fig. 2** shows the routes of *angkot* and **Table 2** shows their characteristics. The characteristics of *Angkot* in Banyuwangi can be described as follows :

- They are owned and operated by individuals or cooperation of about 170 units / groups.

Population density (People/km<sup>2</sup>)



Route Pattern

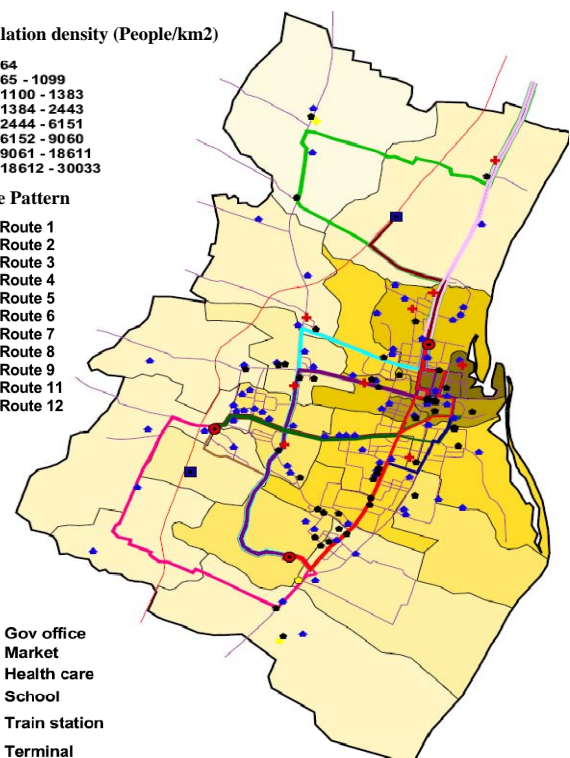


Fig.2 Routes of *angkot* in Banyuwangi City

- b. The government has little direct influence on service outcomes. The real authority of the governmental institution in the operation of public transportation is limited only in the administration and legislation aspects.
- c. *Angkot* can be only operated on a fixed route and stops on demand service.
- d. Licence is given by local government through Local Transportation Agency, *Dinas Perhubungan*, to a vehicle, not to the owner or operator. Consequently, the vehicle with a license can operate on only one particular route. Their operations are not based on a timetable and their daily operational hours are unconfirmed. *Angkot* operates along the routes and without any particular stopping facilities.
- e. There is no financial support or subsidy from government. *Angkot* drivers has daily contract to pay a fixed sum of money to the owner. The average of *angkot* age is 15.92 years and the average load factor is low under 70%. This condition make *angkot* inconvenient and less attractive for passengers.

Table 2 *Angkot* and their route network in Banyuwangi City

Route	<i>Angkot</i>			Route network of <i>Angkot</i>		
	Number (unit)	Average Age (years)	Avg. Load Factor (%)	Route length (km)	Deviation Level * (%)	Overlapping level ** (%)
Route 1	34	17.00	58.33	5.16	77.28	65.28
Route 2	16	16.63	41.67	7.16	73.77	59.77
Route 3	10	18.30	50.00	7.83	73.93	12.23
Route 4	9	16.67	36.11	5.88	70.97	57.61
Route 5	8	16.00	61.11	5.31	75.87	48.83
Route 6	38	15.45	58.33	5.26	74.46	6.79
Route 7	8	16.75	61.11	7.21	73.23	19.28
Route 8	12	14.75	55.56	6.50	73.27	48.12
Route 9	10	11.30	41.67	9.91	76.02	27.00
Route 11	5	17.80	44.44	8.09	39.88	7.15
Route 12	20	15.10	72.22	11.81	76.67	15.38

\*) Deviation level = ratio between the difference of actual route length and route length based on the shortest path linking origin and destination

\*\*) Overlapping level = ratio between the length of overlapping routes and the actual length of a route.

Table 3 Problems of urban public transport, *angkot*, in Banyuwangi City and transportation policies required

Variable	Existing Situation and Problems	Required policy / planning strategies
Structure of road and <i>angkot</i> route network	<ul style="list-style-type: none"> <li>- The road network is tangential. Most of the routes are along the two main roads which run from the north to south and concentrated in the central part, as shown in <b>Fig. 2</b>.</li> <li>- Average route length is 7.28 km.</li> <li>- There are many routes with higher overlapping section, 50 – 65 % as shown in <b>Table 2</b>.</li> </ul>	<ul style="list-style-type: none"> <li>- Upgrading the existing public transport system</li> <li>- The route design of public transportations must be more attractive, with higher level of accessibility, mobility, safe, convenient and comfortable by comparison with private vehicles.</li> </ul>
License based on vehicle	<ul style="list-style-type: none"> <li>- License is given for lifetime on vehicles without clear criteria. In reality, the license is only a permit for a vehicle to operate in a certain route. There are no terms demanding any quality standard such as the age limitation of <i>angkot</i>, service quality etc. It will cause the failure of <i>angkot</i> renewal program.</li> <li>- Formally, there is no fleet size limitation. This system makes difficult to control the number of fleet that causes excessive number of vehicle for a particular route.</li> </ul>	<ul style="list-style-type: none"> <li>- Licence based on vehicle should be replaced by route license given to an enterprise by a contract between the government and the operator.</li> <li>- The contract contains all rights and responsibilities, as well as awards and punishments.</li> <li>- Route license should require all aspects such as operation duration, frequency (number of daily operation), operation conditions, demanded quality service, fixed timetable, and on schedule services.</li> </ul>
<i>Angkot</i> age and their availability	<ul style="list-style-type: none"> <li>- The average age of <i>angkot</i> is high ( 15.92 years).</li> <li>- Disparity of supply and demand where there is un-appropriate distribution of <i>angkot</i> in all day operation for each route.</li> <li>- <i>angkot</i> drivers tend to suspend the service in order to minimize operating costs in off-peak hours.</li> </ul>	<ul style="list-style-type: none"> <li>- To encourage to renew <i>angkot</i> by regulating the age limitation of <i>angkot</i>.</li> <li>- To formulate the scheme of subsidy to reduce the high operating cost of <i>angkot</i> and to ensure the availability of <i>angkot</i> in their operation.</li> </ul>
Load factor	<ul style="list-style-type: none"> <li>- Un-appropriate number of vehicles and high disparity of load factor creates 'fat and thin routes'.</li> <li>- The operation does not comply with the regulated route (low law enforcement).</li> </ul>	<ul style="list-style-type: none"> <li>- To rationalize the number of <i>angkot</i> agree with demand and supply of passengers.</li> <li>- The service quality should be standardized according to the requirements of operation system.</li> </ul>
Demand of transport service	<ul style="list-style-type: none"> <li>- The unattractive and uncondusive condition of public transport encourage people to use private vehicles.</li> <li>- The significant increase in use of private cars and motor - cycles cause the decrease of public transport users.</li> </ul>	<ul style="list-style-type: none"> <li>- To develop consumer oriented transportation system by prioritizing to safety, convenience, and comfort.</li> <li>- To control cars and motorcycles ownership and the use of them.</li> </ul>
Transport planning	<ul style="list-style-type: none"> <li>- No master plan about the urban transport</li> </ul>	<ul style="list-style-type: none"> <li>- To formulate proper policies to support the use of public transport and make master plan</li> </ul>

#### 4. Summary

- 1) The role of *angkot* as a vital public transportation mode has been falling in Banyuwangi.
- 2) Rapid growth of motorcycles and private vehicles, and low service level of operation may lower the function of *angkot* as a public transportation system.
- 3) Some financial supports are needed to renew *angkot* vehicles.
- 4) In order to improve the urban transport system in Banyuwangi, it is required the local government formulate proper policies and carry out them.

#### Reference

- 1) BPS (*Biro Pusat Statistik*) Banyuwangi Regency : Banyuwangi in figures, Banyuwangi (2001-2006).