

# INTERNATIONAL CONFERENCE



The Second International Conference on  
Engineering and Technology Development

# 2<sup>nd</sup> ICETD 2013

27, 28, 29 August 2013, Bandar Lampung, Indonesia



**PROCEEDINGS**



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Hosted by :

Faculty of Engineering and Faculty of Computer Science,  
Bandar Lampung University (UBL), Indonesia

# 2<sup>nd</sup> ICETD 2013

THE SECOND INTERNATIONAL CONFERENCE  
ON ENGINEERING AND TECHNOLOGY DEVELOPMENT

28 -30 January 2013  
Bandar Lampung University (UBL)  
Lampung, Indonesia

## PROCEEDINGS

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## PREFACE

The Activities of the International Conference is in line and very appropriate with the vision and mission of Bandar Lampung University (UBL) to promote training and education as well as research in these areas.

On behalf of the Second International Conference on Engineering and Technology Development ( 2<sup>nd</sup> ICETD 2013) organizing committee, we are very pleased with the very good response especially from the keynote speaker and from the participans. It is noteworthy to point out that about 80 technical papers were received for this conference.

The participants of the conference come from many well known universities, among others : University Kebangsaan Malaysia – Malaysia, APTIKOM – Indonesia, Institut Teknologi sepuluh November – Indonesia, Surya Institute – Indonesia, International Islamic University – Malaysia, STMIK Mitra Lampung – lampung, Bandung Institut of Technology – Bandung, Lecture of The Malahayati University, B2TP – BPPT Researcher – lampung, Starch Technology Center – Lampung, Universitas Islam Indonesia – Indonesia, Politeknik Negeri Malang – Malang, University of Kitakyushu – Japan, Gadjah Mada University – Indonesia, Universitas Malahayati – Lampung, Lampung University – lampung, Starch Technology Center – Lampung, Universitas Riau – Riau, Hasanuddin University – Indonesia, Diponegoro University – Indonesia, King Abdulaziz University – Saudi Arabia, Parahyangan Catholic University – Indonesia , National Taiwan University–Taiwan, Surakarta Christian University – Indonesia, Sugijapranata Catholic University – Indonesia, Semarang University – Indonesia, University of Brawijaya – Indonesia, PPKIA Tarakanita Rahmawati – Indonesia, Kyushu University, Fukuoka – Japan, Science and Technology Beijing – China, Institut Teknologi Sepuluh Nopember – Surabaya, Researcher of Starch Technology Center, Universitas Muhammadiyah Metro – Metro, National University of Malaysia – Malaysia.

I would like to express my deepest gratitude to the International Advisory Board members, sponsor and also to all keynote speakers and all participants. I am also gratefull to all organizing committee and all of the reviewers who contribute to the high standard of the conference. Also I would like to express my deepest gratitude to the Rector of Bandar Lampung University (UBL) who give us endless support to these activities, so that the conference can be administrated on time

Bandar Lampung, 29 August 2013-08-26

Mustofa Usman, Ph.D  
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## PUBLIC TRANSPORTION CRISIS IN BANDAR LAMPUNG

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**Abstract-***The increase number of personal vehicle is not comparable with the growth of public transportation. Though the number of civil has increased rapidly and followed by the increase of people mobility from one place to another. This immeasurably mobility must be facilitated by public transportation in order that the traffic is not crowded by private vehicle. Because of the increasing personal vehicle user's, it will have an impact on improvident of using motor cycle fuel along with it traffic jam that causing time and costs improvident and it is also makes an environmental pollution. Therefore, the growth of public transportation on the city must be held as soon as possible in order to respond increasingof the townspeople, increasingthe number of people mobility from one place to another andincreasing the motor cycle user's.*

Keywords: Crisis, public transportation, Bandar Lampung.

### I. Introduction

he development of public transportation in Bandar Lampung is low enough if we compare with the other cities in the world. This happens because the orientation of urban development is not clear enough until the last 2010. The tendency of big cities in southeast Asia (Evers, 2002), who experienced number of growth population fast. This mobility increases if not facilitated by public transportation will make the civil to use their personal vehicle such as car and motor cycle. Especially if we see the settlement that located too far with market and office complex that has made the mobility quantity increases. As long as there is no worthy transportation for being a main transportation, then the mobility will be facilitated by personal vehicle.

Bandar Lampung has a complicated problem on cities transportation that is caused by the settlement is located too far with location of economic activity. That makes us need extremely policy breakthrough in order to repair cities transportation.

In the middle of that condition, Bandar Lampung also have problem with the decreasing of public transportation number. In this city, until 2013, there are two kinds of public transportation, those are BRT Bandar Lampung and Mini Car Public Transportation. Both of them is having problem with the quantity include with its management issues. It makes the public transportation services reach their limit. The government is seeking to repair public transportation even though the challenge is not easy. The existing data on Department of Transportation until 10 Mei 2013 said that the operated BRT currently is operating 75 units and the Mini Public Transportation is about 1000 units. There are many pros and cons in that repairs gaining, but this repairing steps cannot be stopped, those are the obligations to change the city. Retard on the taking policy and implanting, it will make the provision of publictransportation become difficult in Bandar Lampung. We can take an example on Jakarta, when a city has afraid to improve their public transportation caused by the mass tension that

complaining on so much things, such as old public transportation that the existence is agitated by the new one, the growth cost according to some parties need a big cost, and operation problem that potentially having problem, it has produced problem cornice in traffic city globally. Bandar Lampung has to be brave to take policies and lawsuits to repair the public transportation problem so we will not fall to the same hole likes Jakarta did.

At any rate, the growth of public transportation has to be as soon as possible to be held to satisfy the town needs at this time and the future for sure. Macro public transportation concept must have been executed even from the smallest thing to compare with current demand. But after that the macro concept has to be realized fully so that public transportation supply is comparable with mobility number from one place to another. As we can see, when the mobility isn't facilitated by the public transportation, the mobility will be taken by personal vehicle like car or even motor cycle.

What about pedestrians? From the quantity, the number of pedestrians isn't comparable with vehicle users. The tendency of pedestrian is not more than 300 meters. The destination is more than 300 meters so that they must use motor cycle. Related to non-engine users like bicycle, in Indonesia it is still not a common culture. Tendency of bicycling is only on some moments, not as regular public transport. Even a tendency, the using of bicycle is only following trend. Plus traffic conditions and street facilities which not support or even calling mass desires to use bicycle (non-motorized transportation).

Because of that the public transportation development must take government attention, especially in this case Bandar Lampung government. Vehicle number that passing city roads have been increased which indicates that the mobility number increase highly. Generation area and pulling people movements spread at many points with medium and far distance. So they need movement tools from one place to another fast, cheap, comfort and save.

The mass city tendency at is using motor cycle as main locomotors. The way to proof motor vehicle user's number is much more than car users and public transportation is simple. The way is when heavy rain comes, lonely roads. The passing vehicle as we can see is only personal vehicle and public transportation. This is the simple way. To know the compositions of the vehicle that passed on a currently roads is using traffic volume survey and census surely.

Thus the vehicle number will be recorded well and the result is accountable.

#### **Population and Land Use**

Bandar Lampung population continues to increase. The official data that launched by Bandar Lampung department statistical town indicates that population number in 2012 as many as 902.447 lives (BPS Bandar Lampung, 2013). This quantity increases 1 percent according to population number in the previous year (2011).

This growth below the National growth that reached 1, 5 percent per year, which causes the government be charged to reactivated Planned Family program in order to press that rapidly growth rate. This needs to be addressed to the government because the uncontrolled population will be causing an

environmental problem, clothing needs and uncontrolled food and shelter. More over in 2030 have been estimated almost 50 percent the population will take cities location (Evers, 2002).

Table 1  
Population number of Bandar Lampung  
(2008-2012).

YEARS	NUMBER OF POPULATION (LIVES)
2008	822.880
2009	833.517
2010	879.651
2011	891.022
2012	902.477

The Source: BPS Bandar Lampung 2013

Reported by BPS Bandar Lampung the number of population which has been estimated is smaller than the existing population. Recording to surveyed data the population number of Bandar Lampung until 2013 has reached 1,3 million lives.

This confusing population isn't our main focus. But the facts indicate that population number is continuously increase that also seen from how parking lot crowded become on the economic area and office, resort and education, the increasing vehicle volume that continuously affecting to the level service even though the road capacity has been added by road broadening, the increase of vehicle number is continuously felt, because the congestion point is just like snowball.

This indicates that city transportation problem isn't just caused by the population number that increase, it is also caused by the increase of vehicle user, unprepared public transportation ship and commuter stream or even population movement from outside town to the inside. This commuter normally located on the edge of town or even located on the outside of city

administration (such as South Lampung regency, Pesawaran and Pringsewu) but they have inside the town activity. In the morning they went to the city and in the evening they left the town, back to their home that located on Bandar Lampung surrounding area. This is seen from how crowded become the traffic flow on ZA PagarAlam Street.

Bandar Lampung land distribution system also contributes on transportation problem. Economic activity centralization which placed away from the settlements has led to high needs of civil mobility from one to another place. The settlements is in city territory is in Kemiling, Langkapura, Rajabasa, Way Kandis, Way Halim and Sukabumi. Economic activity temporary placed on another location is located on Panjang, TelukBetung, TanjungKarang, Kedaton, and LabuhanRatu. Differences in location or there are distances between the settlements and economic activity has big contribution on highly needs mass mobility.

But this happens as a logical consequence of development and cities growth. Land utilization control was really difficult to realize because the government assumes that they have limits on controlling land utility because the owners of the land was mass. Regulation of layout is owned by Bandar Lampung about in 2004 through Perda No. 4 Tahun 2004 it's about RT RW in Bandar Lampung. This cause land utilization in the previous years finished with compromise. This is also make the mass unimpeded and businessman to utilize the existing land according to their interests and trend of market mechanism in that time.

Central economic activity deployment and settlements also have a

tendency in the cities on the development countries. Horizontally a construction settlement is a placing culture which owned and adopted by mass. Settled vertically have not became a trend yet even for flat constructions was in this previous years and have been a part of national program to build 1000 twin block of flats throughout Indonesia in order to satisfy the increasingly needs of settlements, but the handy house was limited and due to high costs of land.

Table 2  
Tendency of Land Use in Bandar Lampung

EXISTING USE TRENDS	NAME OF REGION
Settlements Activity	Kemiling, Langkapura, Way Kandis, Way Halim, Sukabumi, and Rajabasa
Service trading activity, office affairs and education	Panjang, Teluk Betung, Tanjungkarang, Kedaton, and Labuhan Ratu

Option which allowed is built flats in so that single field land with certain board can accommodate many houses with vertically design though it is not culture of settlement. The mass still choseto stay in the edge of town, to take the cheap cost of lands. High cost of mobility temporary is immeasurable because there is much option of using motor cycle. The existing public transportation was not worthy enough to reach all city regions so that the using of motor cycle is a realistic optional at this time, for mass that settled in the edge of town.

The consequences is the community save will be threatened, the lower healthy and fuel improvident. This is really lowering mass income, but that will not become a reason to stay in the edge of town. That problem is considered as a life challenges. In the end, the government must repair public transportation as soon as possible so that mass mobility that settled in the edge of town can be served by public

transportation cheaply, save and comfortable include with it fast. These things must be implemented so as not to be a complicated problem due to mass existing tendency to use personal vehicle because of the existing conditions.

### Public transportation trend

Public transportation in Bandar Lampung is in repairing process. Developing system of mass public transportation with increasing bus rapid transportation (BRT) in seven corridors is in repairing status. They have operated before and given acceptance from mass. Because of there are some problem with money management in the concern of investor in this case is PT. Trans Bandar Lampung (PT TBL), finally today there are only 4 active corridors. It was not supported by suffice BRT armada. If before PT TBL and their partner operated almost 180 buses, this time they only have 75 buses that operated. Indeed becomemore less in arrow with buses pulling by PT TBL creditor.

Table 3  
Type and number of public transportation

JENIS ANGKUTAN UMUM	JUMLAH ARMADA DAN KAPASITAS TEMPAT DUDUK	KETERANGAN
Mikrolet	1000 unit 1 unit = 12 penumpang Kapasitas tempat duduk = 12.000	Jumlah mikrolet berdasarkan data P3ABL berdasarkan ijin operasi tahun 2002-2004. Tersebar di 14 trayek angkot mikrolet. Ijin usaha perorangan.
Bus BRT	75 unit (Mei 2013) 1 unit = 28 duduk, 20 berdiri Kapasitas tempat duduk = 3.600	BRT dikembangkan oleh PT TBL yang diberi kewenangan untuk mengoperasikan 250 unit. Komposisi PT TBL = 210 unit, KSO PT TBL 40 unit.

Source; analytical result and city government Bandar Lampung, 2013

Microbuses temporary operate this time in Bandar Lampung will placed in feeder lane. Number of microbus until this time is 1000 units (P3ABL), 2013), which operating on all old track. The number have estimated will be survived



until 2014 in arrow with issuance of discretionary policy from the city government which give tolerant for microbuses business to extend the license of operating until 2014 as their demand for mayor. Comparable with Perwali about public transportation design on 1985 reported that track license will be forced until 10 years.

But the effect from BRT that is not operated yet optimally so the operating will be extended until 12 years, or until next 2014. The number of microbuses mentioned is smallest from the previous years. According to transportation department of Bandar Lampung, in the certain time the supreme numbers of microbuses have reached 3800 units. But in arrow with implementation city development policy bus city, so the transportation license will not be extended until have been decreased from years to years until only 1000 units exist.

Both kinds of existing public transportation reach the limit in carrying number of passengers. In facts the data that have been reported by business and also with city government though Transportation Department Bandar Lampung, the filled capacity is only for 50 percent and for BRT 60 percent. It is showed that mass movement is million travels per days, un-facilitated by public transportation.

It is uncountable by using estimation, if there are 850 residents and the 70 percent of them taking a travel twice minimally, so there are 1.19 million travels in city. And if it's added with residents out of city that travelling inside the city. So it will be millions of travelling per a day that must be facilitated by public transportation. Dearly the number of travelling that served by public transportation is really

low. The totally combination between BRT and microbus that included is really low if we compare with travelling number which happened in Bandar Lampung.

Travelling division according to kind of vehicle (moda share) in Bandar Lampung is placing the motor cycle users and personal car in high position. So it's not surprising if the traffic condition from time to time is increasingly dense by the motor cycle, it led to traffic jam in many points and becomes persistent and caused improvident on time and cost. This thing demanded the government to solve this problem as the effort to pressing the endless problem that always shows up. The more strategic effort is developing powerful public transportation, providing the best facilitation for pedestrian and bicycle user, enact the policies include that complicate personal vehicle such as vehicle tax which high, progressive tax parking and implanting road pricing etc.

Table 4  
Travelling percentage and conveyance

CONVEYANCE	NUMBER OF USER FROM TRAVELLING TOTAL IN PERCENTAGE
BRT	2,56
Microbus	8,53
Car	26,67
Motor Cycle	62,23

Source; Analytic Results, 2013

Bandar Lampung only has two kinds of public transportation this time, such as BRT and microbus. BRT is in developing process and need long enough time to take the role in concept ideally as public transportation. Microbus temporary operate until 2014 apparently like the older one. The microbus also estimate is not operating on feeder lane yet because the potentially comprehension will be formed is not exist. The exception if BRT

is going as plan in near future, so can be feeder lane will operate even though the microbus doesn't pass on it

However the new vehicle license granted to business entities, as mandated by UU No. 22 Year 2009 on Traffic and Road Transportation. This is in order to build the urban public transport system. While not perfect, the development of public transport is very urgent realized starting from now.

Problems handling challenges

In an effort to increase the number of people traveling by public transport, then the steps must be taken:

1. Build a good public transport system

- a. Building a mass transit-based tire rubber (BRT), as well as rail / power such as the LRT and MRT. Public transport is operated on the main line, which in one way has the ability to transport passengers in large quantities. At this time the city of Bandar Lampung has developed BRT must continue to be refined. And if later the population has increased the need to be built over a mass public transport like monorail and subway again.
- b. Build transit feeder (feeder). Feeder transport current is microbus, which is a connector between the residential area with the main line. The existence of the feeder is very important in the effort to build rapport with the main line of residential areas or commercial areas and services. Feeder in the future may change the vehicle in line with the increase in travel demand due to growing population and booming economy of the city.

- c. Build a special line of non-motorized vehicles (non-motorized transportation). Non-motorized vehicles should be given the same track with a motor vehicle. The supply lines should not be only to facilitate motor vehicles such as motorcycles and cars, but also must provide the same path for bicycles and other non-motorized vehicles. So that, by providing this special line will be able to encourage people to use non-motorized vehicles.

- d. Build pedestrian facilities (pedestrian). Pedestrian facilities are often overlooked. In many cities, pedestrian facilities used by traders, parked motor vehicle, even a motorcycle traffic lane to avoid traffic jams on the road. Therefore, the provision of special facilities for pedestrians are equipped with a sitting area and garden (street furniture), should be performed. The goal is that people feel comfortable when walking. Must be one of the main pedestrian main program Bandar Lampung city government to support the development of urban public transport is good and in order to create urban transportation system that is environmentally friendly and sustainable.

2. Controlling the ownership and use of private vehicles

- a. Taxes are costly to purchase a personal vehicle. Currently the personal vehicle tax is still very low. Older car is the more cheap tax. Because components of tax calculation based is the price of the vehicle. Eventually many

people who buy a used vehicle for a cheaper price so affordable and low tax burden for adjusting price and production year vehicle. Therefore, this pattern must be changed by way of a heavy load to the owners of old vehicles. So there are no age restrictions on the ownership and operation of private vehicles. Thus the judge has a personal vehicle as a burden and eventually they use public transit. However, the application of this concept is the requirement when public transport is established and running well.

- b. Restrictions on ownership of private vehicles should also be performed. As stated above, the imposition of a high tax burden is expected to reduce the interest of the people to own and use private vehicles. This restriction is to extend and complicate the terms of ownership and use of private vehicles. There should be a guarantee of work that the office provides parking space for the vehicle, must be approved by a neighbor who expressed no objection to the presence of the vehicle, and so on. In essence, this instrument makes people consider that having a personal vehicle is difficult.
- c. Taxes and parking fees are high. Imposition of taxes and parking fees can also be an instrument to reduce the use of private vehicles. This step is applied mainly in the city center or in the center of economic activity so that the load area or zone of economic activity of the existence of the parking lot can be reduced. Because the

center of economic activity should be met by the person, not the vehicle. So that people can freely doing activities / transactions in the zone. Must be specially prepared vehicle parking lot so as not interfere with the main function of the zone.

- d. Implementation of road pricing. Implementation of road pricing is done to reduce the number of vehicles passing a certain road. But it could also be done to reduce vehicle use in general by applying all roads be worn path road pricing so that it will suppress the use of private vehicles.
- e. Tightening ownership driving license (SIM). Current driving license issue seriously enough because society has definitely aged over 18 years are allowed to have a driver's license. That is, a license is not a difficult thing to come by. Easy to get is relative. Thus the implementation of strict procedures in issuing a driver's license must be carried out by the police.

It takes a lot of effort to build a better transport conditions in Bandar Lampung through the development of public transport. Encourage the use of public transport as the main means of transportation in the community mobilized from one place to another, it takes a motivating factor and a pull factor to build a new culture in transporting within the city.

**Challenges in any effort to build public transport in developing countries, especially in Bandar Lampung is;**

1. Low commitment

Commitment of regional heads, legislators and government officials should be strong enough to build Lent because construction takes a long time and cannot be quickly formed. Lack of commitment by local government officials, especially heads will complicate efforts to build good public transport.

2. Regulations that do not support

Regulation in the form of local regulations (regulations) and regulations mayor (Perwali) still has not specifically mention the obligation of the government to build a reliable Lent. Current regulation is still struggling in revenue to be achieved through policies related to public transportation. Call it regulation on licensing of public transport and parking, which is not explicitly mentioned on the obligation to provide the area with a good parking space. All of them still focus only on local income only. Therefore support appropriate regulation and in accordance with the requirements in the construction of Lent is needed.

3. Public transport planning is not detailed

Saum development planning should be made as detailed as possible so that the government can do the technical apparatus in accordance with the direction of the existing design. Saum development concept that exists today is still very macro that still needed further planning steps for detailing Saumdevelopment planning such as planning the hall, bus stops, park and ride locations, pedestrian paths, and so on.

4. Inadequate human resources

HR issues it has become a major issue of government officers. This happens due to the bureaucratic system that

shackles. But with the special assignments will be made of existing human resources to focus on the handling of public transport. Upgrading human resources must still be implemented on a regular basis so that ability, sensitivity and motivation to build a good public transport, will be maintained. Good HR will be able to build a good system. And hope, will produce good results as expected and planned.

5. Budget constraints

Budget issues are often the reason given by authorities when required to build good public transport. Though the budget issue is a matter which is not a constraint so because the central government has prepared a special budget for areas that wish to develop Lent. Can also use the local budgets were implemented in stages of development. It could also encourage the private sector to invest in public transport to support regulations that protect private investment and protect the interests of the public as users of public transport. Another scheme is to use public-private partnership scheme (public private partnership) in which the position of the government and private co-exist and perform every task that has been shared before in order to achieve the establishment of Lent in Bandar Lampung.

Various challenges to build a mass public transport system should be completed by the city government. Community support is quite large and the mass media also support the efforts of the city government. Because the issue of public transport is an issue that is sensitive enough so that everything that happens instantly became the talk of the community.

Because of the support of the public and the mass media becomes very important to be used as support the government to build good public transport. So that local government should be able to take advantage of this momentum because of this support comes not easily obtained.

### Conclusion

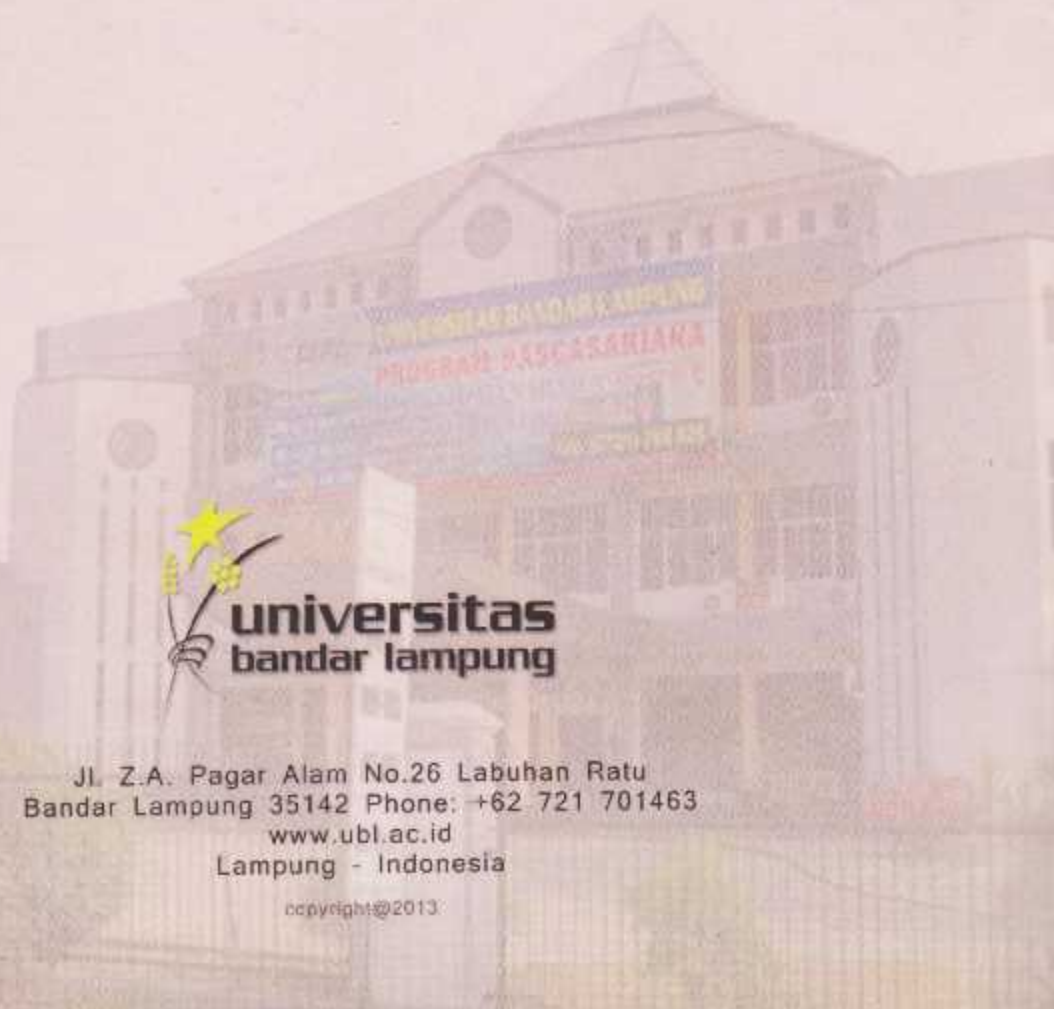
In order to address the issue of public transport crisis in the city of Bandar Lampung, the government must have a commitment to encourage the growth and development of public transport. The government should also have a commitment to reduce the tendency of society to reduce the ownership and use of private vehicles. Without a strong commitment, as well as any regulatory and planning of urban transport reform, will not be able to create a good transportation system. Meanwhile, the urban transport sector is well developed and the needs of the modern city. Without a good transport then it will not be able to create an environmentally friendly city conditions (green city) and creates a sense of comfort to the citizens.

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