

Subsession 1

City and Transportation

Chairperson (Mr. Yoshiya Yamashita, Director, Urban Planning Dept., Fukuoka City)

We now will commence Subsession 1. The 8 participating cities in this subsession will be, Kagoshima, Bangkok, Fukuoka, Guangzhou, Kuala Lumpur, Naha, Oita and Pusan. We ask for your understanding in our nomination of Mr. Yoshinori Akasaki, Mayor of Kagohima as chairman of this subsession and Mr. Nobuo Yoshida, Professor, Faculty of Engineering, Fukuoka University as its commentator. Mayor Akasaki, we wish you would chair this subsession, please.

Chairman Akasaki

Good morning, everyone. I will be acting as chairman today. I hope that the discussion in this session will contribute to the success of the City Summit, through a harmony of city development and the residential environment. Thank you for your cooperation. For convenience, I would like to make my presentation first, and then ask the rest of you to present in alphabetical order. I will begin with the presentation for Kagoshima City.

PRESENTATIONS

KAGOSHIMA |||

Mr. Yoshinori Akasaki

Mr. Yoshinori Akasaki, Mayor of Kagoshima

As I mentioned in the General Meeting, Kagoshima serves as the political, economic, and cultural center of southern Kyushu, and is an important focal point for land, sea, and air traffic. First, I would like to explain Kagoshima's present transportation system. Air traffic is regulated through Kagoshima Airport, which is located approximately 50 minutes by car from Kagoshima City. It is used by over 5.5 million passengers annually. Aside from flights to major Japanese cities, there are also international flights to Hong Kong, Seoul, and Taipei. The numerous flights to Amami Oshima, Okinawa, and other southern islands are an important trait of the airport.

For Kagoshima, which is located by the sea and serves as Japan's southern core city, maritime traffic is very important. While Kagoshima serves as a departure point for ferries connecting Okinawa and southern islands with mainland Japan, it also acts as an import port for primary products such as feed and rock from China and Southeast Asia.

Kagoshima's main port area is presently undergoing great reconstruction. In addition we are engaged in a waterfront development plan along the 30km north/south stretch of shoreline. This project, based on the Kagoshima Bay Harbor Plan, is due to be completed by 2005. We firmly believe that Kagoshima's maritime traffic and interaction with Southeast Asian countries will be active and substantial upon completion of the project. I will now discuss land based transportation in the order of expressways, main roads connecting the city and neighboring areas, and roads within the city limits.

Kyushu lags behind the rest of the nation in the construction of expressways. Especially the area surrounding Kagoshima is experiencing a shortage of expressways. For the sake of balanced national development and the progress of the entire Kyushu region, we feel that it is important to complete the expressway projects and create a one day travel sphere within Kyushu.

The highways connecting Kagoshima City and the surrounding areas play a very important role in the management of an integrated administration whose core city is Kagoshima and in the creation of a large sphere of life. Kagoshima Prefecture is largely in charge of constructing these roads. As the exchange of goods and people between Kagoshima and surrounding cities and areas flourishes, new countermeasures dealing with the increase of traffic are necessary.

Compared to other regional cities Kagoshima has improved its roads in a progressive manner and has been able to handle traffic efficiently. In recent years, however, traffic jams have increased. In the 20 years between 1970 and 1990 the number of cars owned in Kagoshima City has drastically multiplied over 6 times from 40,000 cars to 250,000. Due to this expansion roads leading into the city and access roads from residential districts to the city have become increasingly congested during rush hours. Also, the business activity produced by the industrial zones and whole-sale retailers along the waterfront in the southern outskirts of the city have created serious chronic congestion problems on the roads to the center of the city. One of the problems Kagoshima City needs to solve is the development of an efficient road network that meets the traffic needs of the city.

One particular road construction project is the "Bay Shore Road" that will serve as a north/south highway and deal with the business activity produced by the industrial zone and the newly developed waterfront. Another major road project is the construction of an east/west highway that will connect to the Southern Kyushu Western Expressway presently under construction.

In order to provide easy access among the dotted residential areas and to the center of the city, we plan to construct the "Echo Line Highway."

In addition, the use of bypasses, making traffic more efficient, and underground passages, separating pedestrians from the traffic, are some of the new methods that we have

Prof. Krisda Arunvongse, Governor of Bangkok

Ohayo Gozaimasu. Mr. Chairman and colleagues.

Bangkok has enormous traffic problem, as you have probably read and heard. Those who have been there have suffered our road. Just let me give you a brief description of Bangkok. That we are a town with official population of six million, but actually we have about eight million people in the city, because of the migrants from country who came in to work in textile, to drive a taxi or a tricycle taxi called "took took", and to sell goods on the sidewalks. These are the people who didn't change the registration from their upcountry town into Bangkok, so actual population is about eight million, and there are perhaps half a million people who live in neighboring towns, eastern town of Dunbukelry who came into Bangkok to work during the daytime, and drive back to their own town at night.

The main trouble is the lack of proper city planning. We have never had any city plan of Bangkok, until about two years ago, where the plan is very rough. Bangkok has been divided into four zones only. The high rise, high density zone; the medium zone; the low density zone; and agricultural zone. One region superimpose upon the other, which is very rudimentary kind of planning, which sometimes contradict what need to be done in order to solve traffic problems. This is due to the fact that the authority for the planning doesn't rest with the Bangkok Municipal Administration, but rests with the Planning Department of the Ministry of Interior. And we are fighting very hard to look at the authority to ask. We might succeed in a few months.

We have a planned area of 1,500km². Only 10% of it, 150km² is the central Bangkok, where high rise, high density buildings, all the traffic congestions that you experience happen.

Due to the big boom of the past five or six years, the car population increase up in dramatically. In about four or five years time, we double the number of cars. And the rate of car increase now is 250,000 cars a year. About 600 or 700 cars are being registered every day. And our road surface in Bangkok is only 8% to 9% of the central area, which is much below normal standard worldwide, which is between 18 and 25%. In outer Bangkok, 90% of the area outside of 150km², we have a road surface of only 3%. That's why it result in a great congestion. When people who live in so called dormitory areas outside of central Bangkok and neighboring towns each morning come in to the central of the city and each evening go out, you see the expressways and arteries coming in full on one side, empty on the other in morning, and change side in the evening.

We have inadequate public transportation system. We don't have rapid transit yet. We have a train that doesn't serve all that well. The main public transportation is the bus service, which is very poor in quality because the control on the fee of ridership

is only a ten yen ride, or twelve US cent ride, which is too low in order to get good quality. The bus and the government has to subsidize each year in order to retain that kind of fee.

And I think the solution that we are planning to implement to correct this very very bad situation that has repercussion to a potential economic growth of the country, and detrimental to the external investment in the country also are six.

I think first, we must acquire new busses which the government is planning to do it, because the bus company is also an independent organization, and reporting to the Ministry of Communication, not to the city. So they have to buy new bus. I think that the kind of bus that they need is what I call a car replacement bus. It's not the kind of bus that they run now, that costs JY10 charge. It'll be maybe JY100, 200 charge in order to have comfortable seat, proper air conditioning, rapid frequency of service so that people will switch from using their car from periphery of town into the center of the city by this means, and not only that it has to be more comfortable than ordinary bus, because whatever bus you have, it cannot be as comfortable as your own car. But it has to take you into town, out of town faster than private car by providing a strictly controlled bus lane so that private car will have less road space to travel, so the bus will come faster, and the signal at intersections must be preferential signal for bus lane to pass first, to turn first.

The second solution is the development of road system. Now, we are building outer ring road, which will be completed about two to three years time. And Bangkok municipality are building its external road connecting main arteries and connecting dead end roads by expropriating land so that there will be more of a complete network of internal road within the limitation that we have. We cannot expropriate and expand the road system into Bangkok too much, because the land cost is extremely high. Besides, there are 30, 40 story building right next to footpath. To expropriate that would cost an enormous amount of money. It is not really possible, not feasible.

The third thing is to push for a speedy construction of rapid transit system. Now we have three system on line. If they say go, it should start now. Everything is ready, and if the three lines are completed, we should have about a 60km of rapid transit heavy rail system.

And the fourth thing is the ATC system, Area Traffic Control system, which is computerized traffic intersection signals that Bangkok Municipality has already started, that we complete in less than two years. And full circuit TV monitoring intersection.

And after that, when we have the rapid transit, we should have restricted zone for personal car.

And the last thing that we have to do is to city planning change so that suburban self sufficient center can be created to keep the people in the suburb, where they

area less than one-tenth of its present size. In those days streetcars served the city center and a public bus service was already in operation. At that time, Fukuoka had only 170 automobiles registered. In 1932, streetcar routes extended 25km. In those days, Fukuoka had an ideal transportation system for its scale, and public transit systems were the primary means of transportation.

By 1972, however, when Fukuoka was made an ordinance designated city, which is almost equivalent to a prefecture, the city had a population of 910,000 an area of 256km² and 190,000 registered automobiles. Earlier, during the late 1960s, car ownership had been growing at an average annual rate of 20%. Due to road congestion, streetcars were no longer capable of maintaining their original advantages of on-time performance and safety. Public buses, which had been increasing more rapidly than streetcars since the 1950s, suddenly began losing popularity. In this manner, streetcars and buses were replaced by automobiles as the main means of road transportation.

The construction of a subway and an urban expressway were proposed as fundamental measures to solve the problems of road congestion and deteriorating public transportation systems.

The major objectives of subway construction were to enhance the railway system as a replacement for streetcars and to expand roadways by placing the existing railway network underground.

Beginning in 1975, streetcar routes and railways were discontinued in phases. At about the same time, subway construction commenced, and staged operation began in 1981. At present, Fukuoka has a 17.8km subway network linking 19 stations and serving some 310,000 people daily as their major means of transportation.

The subway system is operated by the city government. Since it is expected to remain an asset of Fukuoka citizens for many years to come, efforts are continuously made to incorporate the latest technology to maintain high levels of safety, convenience and rider service. For example, an advanced automatic control system was adopted to enable one-person train operation. In addition, high quality design work ensures riders comfort in the station. And ticket inspection and collection are automated at all stations.

Fukuoka's subway system is also an important part of the medium distance railway network in greater Fukuoka, which has a population of about 2 million and covers an area of 1,200km². The subway is connected to the Omuta Line of the private Nishi-Nippon Railroad, or "Nishitetsu," which extends southward from Tenjin; JR Hakata Station, the largest terminal in Kyushu; and Nishitetsu Miyajidake Line to the east, and has mutual-through operation with JR Chikuhō Line, serving as the main arterial system in the Fukuoka urban zone.

Furthermore, the subway network was extended to Fukuoka Airport two years ago, connecting Tenjin in downtown Fukuoka to the airport in 11 minutes. As a result,

Fukuoka Airport is more easily accessible from downtown than any other airport in Japan. Fukuoka Airport, linked with twenty cities on international routes mostly within Asia, has thus considerably enhanced its service to local citizens and visitors.

In 1971, the Fukuoka Municipal and Fukuoka Prefectural Governments jointly established a public corporation to construct an expressway. Since 1980, the expressway has been gradually opened to public use. Currently, a total length of 20.2km is used, and extensions are continuously being added. This is a toll expressway. When it was first opened, it was used by about 12,000 vehicles per day ; today, that figure has increased to about 75,000.

At the moment, a project to link the expressway with the Kyushu Highway Interchange is being carried out. Although the interchange is located outside the city zone, relevant roads outside the city zone have been brought under the jurisdiction of the city for development. When this project is completed, Fukuoka will be directly connected with cities across Japan via the expressway, which will become part of a 6,000km network covering the entire country.

Despite these improvements, we have seen that transportation problems cannot be solved easily and instantly.

Challenges Fukuoka City faces in terms of transportation include the following :

First, the southwestern part of the city is a popular residential area that is not served by any railway system ; therefore, a new transportation system must be introduced into this area. In the future, it will also become necessary to consider the introduction of a loop line. Secondly, the network of key roads, shaped like the letter "Y" because of the city's topography and structure, has been causing congestion in the city center and at its inflow points. To solve this problem, a loop-shaped network of roads should be developed quickly. At the same time, we must promote the development of a sub-city center to form a multiple-nucleus urban structure, thereby dispersing traffic flows. Thirdly, the development of a new transportation system should be promoted to coordinate existing transportation systems with areas in which large urban development projects, such as the Island City, are under way. Fourthly, with regard to the environment, measures should be considered to reduce demand for automobiles, especially in the congested city center, to cut down on air and other forms of pollution caused by automobiles. Fifthly, the subway is the most effective way of solving the congestion problems in the three dimensional ways. However, it cost US \$ 200 million per one kilometer to construct the subway. The subsidies from the national government are limited. In this sense, it is very difficult that the urban city get the national government's permission to construct the new line of the subway even if they need it.

To solve these problems, we are promoting a plan to build a mini-subway system, using linear motor cars with steel wheels for more economical operation and serving

a distance of about 16km between the southwestern part of the city and the waterfront, which is currently being developed as a new sea gateway. Our goal is to have this project completed in the early 21st century. Other plans under consideration include the addition of new railway systems to serve new urban development projects such as the Island City project, and the improvement of existing railways. It is also important to provide, once such railway development is completed, transfer systems and facilities to enhance connections between railways and other transportation systems such as buses, so that the transportation load is adequately distributed among several systems.

The possibility of extending the expressway in conjunction with new urban development projects, such as the Island City project, is also under consideration.

The construction of an expressway on the loop road running around the city is already underway and is scheduled for completion in the early 21st century. This expressway will be connected to the expressway I mentioned earlier, and when completed, will form a 65km expressway network in the urban zone.

The ultimate goal of urban development is to ensure a comfortable, safe and rich community life. Accordingly, it is essential that transportation facilities be developed from the user's viewpoint taking into account diverse needs and values while maintaining compatibility with land utilization plans. We in Fukuoka City will continue to make efforts to improve our transportation systems and facilities, believing that developing people- and environmentally friendly transportation systems, employing the latest technology and giving sufficient consideration to those in disadvantageous positions in terms of transportation, will help bring a brighter future to cities. Thank you for your attention.
(Applause)

Chairman Akasaki

Thank you, Mr. Kuwahara. Mr. Kuwahara's presentation introduced the city's basic approach to metropolitan transportation functions, outlining past activities, the current state of affairs and problems, and measures for the future. Fukuoka will be working to revitalize the railway system, and decentralize traffic concentration in the downtown area, and both of these points are themes common to all the presentations.

GUANGZHOU ||||||||||||||||||

Mr. Li Ziliu

Chairman Akasaki

Next I would like to ask Mr. Li Ziliu, Mayor of Guangzhou, to speak.

Mr. Li Ziliu, Mayor of Guangzhou

Ladies and gentlemen, in this sub-conference of the Municipal Governments of Asian Pacific Area, I would like to express mainly my points of view on urban traffic problems in the process of Guangzhou's modern construction of an international metropolis.

Reform and opening has brought about vitality to Guangzhou urban traffic construction. Guangzhou is a city of high density and well-knit development, same as other cities in other countries, with actual living population far more than that of the households. With the expansion of the city and social development, the urban traffic problems become more serious and prominent. Since the reform and opening of 1979, by making use of "special policies, flexible measures" given by the Central Government to Guang Dong Province, Guangzhou has reformed its management system hindering the development of productive forces, has adjusted the general urban space layout, and has chiefly developed new districts of Tien He, Fang Chun, Bai Yun, with urban expansion to Southeast, North and West ; Guangzhou has increased investment in the construction of urban traffic, and quickened the construction of traffic facilities. By the end of 1993, total road length of urban area had reached 1,379km, 3.5 times more than that of 1987, total road area of 13,780,000km², 4 times more than that of 1987, 310 urban permanent bridges, of which 36 flying-over crossings, 63 pedestrian bridges, 5 pedestrian tunnels, 1 river tunnel, have been built. The trans-century project of underground railway has formally begun construction. Emphasis has been laid on highway ring with total length of 60km opened up. Other sections of the road is now under construction. Emphasis has been put on urban public transportations. A public transportation network of various vehicles has been formed such as bus, trolley-bus, taxi, ferry-boats. By the end of 1993, buses put in business operation had reached 2,338, taxi, 12,825, with an increase of 2.6 times and 40 times more than those of 1978 respectively. A multi-lever service of air, ground, water surface, and underground, is going to take shape. Guangzhou is endeavouring to achieve its goal of a modern international metropolis.

According to the high standard functional requirement of an international metropolitan all over the world, Guangzhou will have to carry out its modernization to become an international metropolis within 15 years. The following are the strategies of our urban traffic construction.

That is to make adjust the urban general layout plan. The original planned construction area will be expanded to 555km² for the purpose of stretching urban area, dispersing population of central downtown area, rapidly changing the over burdened downtown area, altering traffic congestions, and the existing state affairs of slow constructions in exterior district area and the road traffic facilities which can not catch up with rapid development in new district areas. Secondly, we would like to establish traffic Market. To form a 3-block capital system composed of government investment, foreign investment and non government investment. Carry out policies of "Traffic supports Traffic" a five per cent administrative construction expenses will be drawn from the total sum the government's fixed assets. Collect tolls from motor driven vehicles over bridges, passing through high-grade roads and high ways, draw traffic funds from city maintenance

construction taxes, from surtax of public utilities and etc. All these constitute the governments investment capitals in traffic. Actively introduce foreign investment such as selling, on set term or payable term, part of management right of traffic facilities, permitting foreign businessmen to build infrastructure of roads, docks, parking areas and etc. Also welcome are any forms of investment of urban traffic construction by foreign businessmen with capitals, techniques and equipments. Draw, on a large scale, non-governmental capitals by issuing debenture bonds, stocks, lottery tickets, and donations as well, establish multiple forms of funds to ensure, in advance, the support of traffic construction.

Thirdly, we would like to develop mass-transit system. Guangzhou with its population of more than 3 million, will actively develop underground railway, light rail traffic. The Number One Route of Guangzhou Underground Railway, with total length of 18.1km, under construction, will be completed in 1998. At the same time, preparations are made for Route Two of Underground Railway. And light rail traffic from Tien He, Guangzhou to Guangzhou Economic Development Zone, and from Guangzhou to Fu Shan.

Fourthly, formulate necessary policies for traffic including full development of public transportations, proper restrictions on bicycles and private-owned vehicles, the carrying-out of traffic controls in main roads and sections in the city proper, the opening-up of pedestrian streets, the split-flow of pedestrians and vehicles, the setting up of more parking areas, and traffic change-points, and etc.

Fifthly, we would like to improve traffic connections between central area and new urban area and satellite cities and towns by building higher-grade roads, to conduct passenger flow and speed up cargo transportation to achieve better urban economic benefits, social benefits and environmental benefits.

Six, we would like to establish incomplete traffic competition market. The city government must have a monopoly position over the plan-right and ratification-right over traffic construction. The city government representing public interests of a certain area and society, has the right to plan and construct traffic according to national economy and social development. It, therefore, formulates a first grade market which can make the government sell development right of infrastructure and the right of management profits. At the same time, a second grade market is going to take shape, which makes traffic investment right, management right, profit right, and mortgage right transferred among enterprises. Also going to take shape is the third-grade market which makes it possible among enterprises and customers, profits gained by providing services and profits paid by the served. There exist free competitions and full selections between the second and the third markets. A fair competition of traffic market appears, in which the winner survive and the defeated, the inferior, becomes eliminated.

Ladies and gentlemen, the realization of a modern international metropolis becomes

Guangzhou's historical choice to stride forward toward the 21st century. We will earnestly learn from the experiences created by countries and areas all over the world, to quicken the system construction of our urban system. We will do our best and conscientiously build Guangzhou into a new prosperous, stable, civilized, beautiful and modern international metropolis. Thank you ! (Applause)

Chairman Akasaki

Thank you, Mr. Li. He presented the current conditions of transportation systems in Guangzhou City and a range of plans for future construction. The formation of the three markets was a development that we found extremely interesting.

KUALA LUMPUR |||||||

Mr. Tham Kok Seng

Chairman Akasaki

Next I would like to ask Dr. Jayaraman S/O Munusamy, Special Advisor to the Mayor of Kuala Lumpur, to speak.

Mr. Tham Kok Seng, Executive Engineer of Kuala Lumpur

Good morning, ladies and gentlemen. On behalf of Dr. Jayaraman S/O Munusamy, Special Advisor to the Mayor , I would like to present. My name is Tham Kok Seng from Malaysia. The paper I would like to present this morning is on the topic city and transport Kuala Lumpur.

Like any other cities in the developing countries, Kuala Lumpur encounters serious transport problems. There are four main characteristics of transport problems. First, oversaturated route networks. Second, insufficient public transport services. Third, our public transport systems are mainly route based. No subway system, no elevated system. Fourth, excessive delay from origin to destination.

The contributory factors to transport problems are first, significant increase in vehicle ownership. Malaysia has experienced two periods of economic booms. The first economic boom we experienced was from year 1979 to 1976. The second economic boom we experienced was in the year 1989 to the present moment. All these periods, there is a sharp increase of vehicle ownership. Second, drastic increase of average daily traffic entering Kuala Lumpur. There are about 1,150 thousand cars entering city Kuala Lumpur every day. Third, high proportions of single occupancy vehicles. There are a lot of drivers coming in city center alone, with no other passenger in his car. The fourth contributory factor is excessive development in the city center.

Now, let us go to the present conditions and problems. The main transport problems can be summarized into six headings. First, road traffic related problems. Second, car parking problems. Third, public transport problems. Four, pedestrian problems. Five, environment problems. Six, route safety problems.

Let us look into details of these problems one by one. First, road traffic related problems. From history, Kuala Lumpur has a radial road systems, which is not a very good systems, because all traffic converge at one point and cause serious traffic congestion in the city center. To solve the problem, we have to introduce a series of ring route systems. First, Inner Ring Route system which was built in the year 1980. Second, Middle Ring Route One, which was built in 1983 and 84. Third, Middle Ring Route Two, which is under construction now. All these ring route systems are aiming to distribute trips and disburse trips into city, as well as bypassing the city. The problem related to these ring routes are the missing links. There is the stretches which are not yet completed, especially in the Middle Ring Route One and Two. The missing link contributes a negative effect on small traffic circulation.

To solve the problems, let us see the future countermeasures and tasks. First, the City Hall Kuala Lumpur and the federal government have taken steps to construct the missing links in Middle Ring Route One and Two. Second, by traffic management strategies, that is by introducing SCATS system, which is Sydney Coordinated Adaptive Techniques. There is many intersections in our Inner Ring Route and city centers all operate in a dynamic way. We optimize green time. The third are the traffic management measures, such as counterflow, one way streets, bus priority junction, bus lane, and others.

The second transport problems we face is car parking problems. As Kuala Lumpur city, illegal and indiscriminate parking have been a serious problem in the early 1980s. However, at present, the problem has been solved substantially in three ways. One, in 1985, City Hall introduced a high curbs for all route projects, that is about nine inches in height, compared to the conventional street cut, which is five or six inches in height. Second, to remove street parking facility as far as possible. Third, to exercise strict enforcements on all illegal parkings. Future countermeasures for the car parking problems. To continue to adopt a policy to prohibit street parkings, and hopefully by the year 2000 to remove it completely. Second, to encourage car pooling by a mass media campaign, which has been launched in July last year. Through car pooling campaign, car pooling percentage has increased to 44%. That is an increase of 14% before the campaign was launched.

The third transport problem is public transport problem. At present, public transport system is totally route based. There is taxis and busses only. There is no subway or elevated transit. Taxis gives rise to serious traffic problem during peak hours. There are three main problems involved with public transport in Kuala Lumpur. First, bus services are unreliable. Overcrowding, low frequency at peak hours. Two, street bus or mini bus terminals are street terminals, with very narrow footpath, no proper protection for pedestrians. Third, there is a lack of bus information, route diagram, and time table for the public. In order to solve the problem, we are observe the following

future countermeasures. To try to amalgamate existing eight bus companies into two. To introduce more air con busses, and to pull our information panels for bus services. The fourth transport problems is pedestrian problem. Problem faced by pedestrians are safety. In Kuala Lumpur, footpath are narrow. No signal control crossings, high route curbs, which is not very comfortable for walking, especially for those who are senior and for children. Obstructions, for example hawker store and too many street furnitures. Countermeasures for the pedestrian problems. City Hall is to provide more signal control crossings and foot bridges. To formulate a policies to keep priority to pedestrians, so a pedestrian can walk safely and leisurely, just like your city Fukuoka. To remove sidewalk hawker stores.

The fifth transport problem is environmental problems. When the traffic level increases, so will the level of air pollutions. The findings of the air pollution study which we have done in 1991 shows that the projected 1994 carbon monoxide level is 7.6 parts per million, as compared to the allowable standard, which is nine part per million. The projected 1994 total suspended particle is 180 microgram per meter cubed, as compared to the allowable standard, which is 150 microgram per meter cubed. As from the study, the air pollution problem in Kuala Lumpur is serious. So to tackle this problem, the future countermeasures are as follows. One, our government is very concerned about the environmental problem, and is determined to solve traffic congestion by starting by starting our LRT (Light Rapid Transit) project. Second, by enforcing carpooling campaign, and others.

Sixth, the traffic transport problem is the route safety problems. A rate of accidents in Kuala Lumpur is relatively high. For example in the year 1992, the total number of accidents per year is 24,697. And for the year 1993, the accident cases has increased to 27 thousand. That is an increase of 9.3%. The reason for the accident is traveling speed, drivers' behaviors and very poor vehicle conditions. Future measures for route safety problems. In 1986, we set up the special Route Safety Council to look into all matters pertaining to route safety, and to have a yearly campaign for safe driving on the road. And we also emphasize on '3E Methods', that is enforcement, education and engineering.

In conclusion, this paper has briefly touched on the transport problem in Kuala Lumpur city and its future countermeasures. We are always positive to introduce new transport systems, to introduce traffic management measures, to have campaign to seek cooperation from the public, and with police to cover strict enforcement. We hope to achieve a better living environment, a city with efficient transport system, a model for others to emulate.

Thank you very much. (Applause)

Chairman Akasaki

Thank you for your presentation on the key features and causes of the traffic problems in Kuala Lumpur, Mr. Tham Kok Seng, along with your discussion of the six major current issues. Kuala Lumpur is making a transition from dependence upon public transportation systems to distributed transportation systems such as LRT and monorails. We all wish you luck in your endeavor.

NAHA |||||||

Mr. Akira Takamine

Chairman Akasaki

Next I would like to ask Mr. Takamine, in charge of urban planning at Naha City, to speak.

Mr. Akira Takamine, The Head of the City Planning Department of Naha

Approximately 305,000 people are living within a very limited municipal area of 38km² in Naha City. This means that the city is overpopulated where there are approximately 8 to 9 thousand people living in an area of 1km². The population during the night is 305,000 but there is a gap where during the daytime the number increases up to 4 to 5 hundred thousand. The history of the formation of the city is as explained during the preinary session which took place yesterday.

Okinawa Prefecture has no railways, our overland transport is solely dependent on the roadway system. Traffic congestion has major impact on social and economic activity, and thus, establishing a smooth traffic flow is crucial. In Naha City, traffic congestion spreads laterally from points of concentration in major intersections. We are urgently seeking measures to combat this problem. In Naha and similarly, in surrounding municipalities, congestion at major intersections during the morning and evening rush hours is increasingly worse. At the "Okinawa Region Congestion Control Conference, consisting of national, prefectural, and municipal government agencies, has been established to combat this situation. Measures effective in alleviating traffic congestion are being put into operation in a systematic and focused manner by the agencies as they administer their respective roadways, upon consulting other parties and checking against the size of projects.

Also, in order to improve the only mode of public transportation in Okinawa Prefecture, the serviceability of buses, an extended 34km of bus lanes have been established in 13 areas, and 5km of reversible lanes have been established in 3 areas.

Fundamental to urban life, the flow of traffic is closely related to various urban functions. In recent year, the objectives and modes of transportation as well as the forms in which it generates and concentrates, have changed remarkably, reflecting the changes in peoples' life-spans and lifestyles. These changes have led to demands for diverse

transportation options for city residents. Also, with the increased use of cars, delays in road improvement within Naha City contribute to chronic traffic congestion and jams. This has caused a decline in the transport capabilities of buses and taxis, a primary means of transportation for residents, affecting the mobility of residents and the region.

Additionally, with the ever widening scope of the exchange of people, commodities, and information, traffic flowing to and from surrounding municipalities has increased. Establishment of a comprehensive area traffic system is a major issue.

The main problems in intra-city transportation are: chronic traffic congestion, delayed road improvements, declines in service capacity of public transportation, lack of pedestrian safety and comfort, and the absence of a network connecting various modes of transportation.

Because urban traffic in Naha depends solely on automotive traffic, it is vital to enhance the quality and standards of road improvement projects in order to solve these problems. At the same time, it is necessary to reorganize the urban traffic system through the introduction of a new transportation medium.

In the 21st century, reportedly some 70% of the Japanese population will live in urban areas.

Although made up of small islands, approximately 74% of the population of Okinawa Prefecture is concentrated in ten cities, already surpassing the predicted 70%. In the municipalities surrounding Naha City, approximately 90% of the residents live in planned urban zones, or in suburban environments. This means that in the metropolitan spread surrounding Naha, there will be further increases of human traffic, both for business and for work and school commutes.

Normally, when an urban area undergoes population growth, it begins from a focal point, such as a train station, and spreads in concentric circles. However, Okinawa's population growth pattern deviates from the norm in that it is concentrated along major roadways. Thus, urbanization progresses along roadways in a spoke-like pattern. Due to the absence of railroads and hence a de facto center of the city, the roads function as the arteries of the urban anatomy.

On the other hand, urban lifestyles and life patterns are changing with the adoption of a five day work week. Especially in the urban zone of Naha and its vicinities, most businesses are commerce-centered, and therefore, people travel in the same directions at the same times due to similar work pattern and hours. In that respect, one concern is that differences in traffic volume between weekday and weekend, or between night and day, may negatively affect city commerce. From such aspects, I feel it is important for urban planners to consider road traffic not merely as a means of transport, but also as a means of supporting the people who live, work, and enjoy the city; supporting

not only the economic aspects of the city but also providing a pleasant living environment for urban dwellers, including pedestrian traffic safety.

In summary, the primary issue for Naha City is the establishment of a transportation system suitable for a gratifying urban life through such measures as the introduction of public rails to relieve congestion.

A rail system is vital to systemizing urban traffic flows. A public rail system will assure an on-time, effective mode of transporting large numbers of people, thus reducing traffic congestion. Through a review of various factors, we have determined that in Naha City, a monorail would be most effective. Currently, we are in negotiations with the national government and other related agencies to start the monorail project in cooperation with the Okinawa Prefectural government and the establishment of a company in the tertiary sector.

Road improvements are also being studied to alleviate traffic congestion. Factors contributing to traffic congestion, such as bottleneck intersections, concentration of traffic in certain spots, insufficient road network, and the lack of right-turn lanes need to be corrected as soon as possible. Toward this end, the "Okinawa Region Congestion Control Conference" needs to demonstrate leadership in resolving traffic problems from the macro point of view. Thank you for your kind attention. (Applause)

Chairman Akasaki

Thank you for your talk, Mr. Takamine. Mr. Takamine's presentation covered a range of measures implemented by Naha City, along with examples, and discussed current issues and future requirements from several perspectives.

It was mentioned that a rail-based transportation system was essential for resolution, and I wish you every success in attaining your goals.

OITA |||

Mr. Keinosuke Kinoshita

Chairman Akasaki

Next I would like to ask Mr. Keinosuke Kinoshita, Mayor of Oita City.

Mr. Keinosuke Kinoshita, Mayor of Oita

My name is Kinoshita. Thank you Chairman. I would like to explain to you my understanding definition of transportation and the challenges.

First, allow me to briefly talk about transportation with respect to Oita City. Though we have long thought that transportation should be safe, comfortable and convenient, I believe we should include other aspects in planning such as minimizing harm to the environment and ensuring accessibility for handicapped persons.

Oita City has been a center of politics, commerce and culture since it was known as "Bungo" and "Funai," long ago. Oita, the capital of the prefecture of the same name,

has developed rapidly since its designation as a New Industrial City and Oita Prefecture has become a leading industrial and commercial center of western Japan. The construction of a coastal industrial city which is highly regarded and is considered an honor student among the New Industrial Cities of Japan has attracted investment from many well-known corporations and brought prosperity to both Oita City and Oita Prefecture. This prosperity, however, has not come without its share of problems. For example, we fell behind in construction of roads and highways because priority was given to construction in the coastal industrial area. Also, the rapid growth of the city spurred expansion of residential areas in the suburbs that were not equipped with adequate roads of access. Consequently, commuting from the suburbs to the city center became a nightmare. As the major roads of Oita City pass through downtown, there were incredible traffic jams. Worse, the downtown area did not expand and develop as the outlying areas did and it remains underdeveloped today.

Let me give you two conspicuous projects we undertook to solve these problems. First, Oita Port was constructed and subsequently turned out to be a magnificent success because we gave priority to consolidation of sea transportation with the construction of the coastal industrial zone. Now the Oita Port has both private and public piers. The private pier is 27 meters deep and has the capacity for 300,000 ton class ships, and the public pier is 14 meters deep, highly functional and can accommodate 70,000 ton class ships. Vessels carrying a large cargo frequently enter Oita Port to unload before setting sail for shallower harbors.

Second, by improving the public transportation system, the traffic congestion during commuting hours has been eased. I would like to show you two examples. One, in order to facilitate train commuting, new stations were opened in heavily-populated residential centers and new commuter trains known as the "Town Shuttle" began operation. Next, reversible traffic lanes and bus lanes were opened to promote bus commuting. These reversible lanes change the flow of traffic of center lanes at times of heavy traffic congestion. One typical major road in Oita becomes congested at a bottleneck tunnel, each side of which has two lanes. During commuting hours, from 7:00 a.m. to 8:30 a.m., for 1,400m, three lanes are used by traffic commuting to the center and only one lane is designated for traffic going in the direction of the suburbs. One of these lanes is used only by commuter buses, taxis and motorbikes. The direction of the reversible lane is shown through the use of blinking lights on the center line, information boards and so on.

Next, I would like to speak about our present situation and problems. Our transport planning in Oita has not been incorporated into the National Expressway Network System and the functions of Oita Port have not been made use of efficiently. Also, concerning local traffic, as our city doesn't have a bus terminal, one lane of the central street

in downtown Oita is used as a makeshift bus terminal, creating incredible traffic congestion. Our city is also plagued by a shortage of parking areas for motor vehicles and bicycles. Other causes of traffic problems include rather narrow streets in the high traffic downtown area and the radial road system of our city. Thus, Oita must work to resolve each of these problems through effective measures.

One project underway concerning the comprehensive traffic network system is the development of the Trans-Kyushu Expressway. The Expressway, which will soon be fully opened, will connect Oita City to Nagasaki, via Saga. Also, our city plans other large-scale traffic network system projects in the near future such as the construction of the East Kyushu Expressway between Kitakyushu and Kagoshima via Oita City and Miyazaki, the Superior District Highway linking Oita and Kumamoto and the Hoyo Strait Expressway, and so on. The Hoyo Strait Expressway will link Oita Prefecture and the island of Shikoku by way of a tunnel constructed under the 13.9 kilometer wide Hoyo Strait. When this magnificent project is brought to fruition, for the first time in history, the islands of Honshu, Shikoku and Kyushu will be accessible by land transportation. Consequently, this achievement will produce a large exchange axis known as the Pacific New Land Axis and will create a loop traffic network encompassing western Japan. Next, allow me to briefly discuss projects currently under consideration as far as our local traffic network is concerned. We in Oita consider the improvement our local road system to be a fundamental aspect of any city planning. Therefore, we are now in the process of upgrading many roads including those for expressway access. Since the quality of our local traffic network is closely related to the quality of our daily lives, there are a great many factors we must take into consideration when planning a road project. These factors include efficient arrangement and function of the road itself, protection of the surrounding environment, beautifying landscape, accommodation of pedestrians and cyclists, separation of pedestrians from automobiles and allowing for adequate parking space. Our city is taking great pains to ensure that these matters are considered from many points of view in order to come up with the best overall plans.

Consider for a moment the problem of parking space development which is indispensable to the success of any project. In the past, providing of areas for parking have been, more often than not, considered the responsibility of an institution's owner. However, parking space development, thus far, has been insufficient to cope with the increasing number of cars on our streets. In addition, it has never been clearly determined who must provide parking for bicycles. In my opinion, we, the administrators, must take the initiative and include plans for adequate parking facilities in the designs for any new road projects.

In Oita City we currently have projects underway which primarily aim to develop the

center city area and to improve the system of radial roads. For example, we are now in the midst of a project to develop the area immediately surrounding our main railway station. We intend to elevate the station and tracks, redevelop the areas that have long been divided between north and south by the station and arrange the main center city streets more effectively. Also, we are reconstructing the intersections of major roads and constructing roads which will bypass the city center. Routing traffic around the city center will greatly improve the flow of traffic and decrease the amount of time required to travel between two points.

Realization of these plans will require considerable time, expense and effort. However, I believe they are necessary for us to be able to hand down to the next generation the benefits of our incredible growth and prosperity that we have acquired through the rapid industrialization of our city. Completion of these projects will, I hope, produce a city with a new, attractive environment ensuring a safe, comfortable, and healthy life for its citizens and visitors.

In conclusion, while systems of transportation should be constructed with the least amount of harm to the environment as possible, they should also be convenient for all users and accessible for the handicapped, the elderly and children. We should guarantee every citizen, no matter what physical condition he or she is in, access to transportation and thus, to as much mobility as possible. It is said a journey of a thousand miles begins with a single step. My efforts, as small as they may be, will be, nevertheless, one step toward continued prosperity and human progress. Let me close by saying that I sincerely hope that this workshop will give us the opportunity for mutually beneficial exchange and that we should commit ourselves to making our world a more peaceful and a better place in which to live. Thank you very much. (Applause)

Chairman Akasaki

Thank you, Mr. Kinoshita. The presentation covered basic approaches to resolving the city's roadway congestion, along with examples, a discussion of current issues, and possible resolutions for the future. I personally agree with Mr. Kinoshita's comments on wide-area traffic systems.

PUSAN |||

Mr. Hong Wan Shik

Chairman Akasaki

Next I would like to ask Mr. Hong Wan Shik, in charge of traffic planning at Pusan City, to speak.

Mr. Hong Wan Shik, Director of the Planning Management Section of Pusan

Good morning, ladies and gentlemen. It is indeed a great honor for me to come to Fukuoka, and sit at this very important workshop. And it is indeed a great honor

for me to introduce our city of Pusan to you. I would like to talk first about the traffic situation in Pusan.

The population of Pusan is 3,887,000 people with 529km² in total area as of the end of 1993. In looking at the city traffic situation of the city, Pusan is mountainous, so it is mountain-rear and seaside type in its structure with major road networks that run through the mountains connecting the north and south, and the east and west. The traffic is 6,659,000 trips for one day with 1.7 trip per person, and the total number of cars is 500,000 as of May 1994. For transportation facilities, there are road extensions of 1,908km, road use percentage of 14.4%, and 9,450 parking areas with 168,000 parking spaces. For the means of transportation, there is 32.5km of subway, 45 city bus companies with 2,700 buses running 170 routes, and taxi companies operating 22,000 taxis. Among these taxis, 11,000 are privately owned. In looking at the distribution of the transportation classified in terms of the different means, 43% use city buses, 18.9% use taxis, 9.1% use subways, 17.9% use cars, and 11.1% use other. Buses are the most important means of transportation, with the taxis in second place in the role of semi-public transportation.

Now, I would like to talk about next traffic policy of Pusan. One is the subway construction. Would you please see this screen. Currently, Line 1 runs 32.5km north-south of the city and 39.1km of Line 2 is under construction with the aim of completion in 1997. The construction of Line 3 is in the basic planning stage at this time, with the goal of completing Line 4 and Line 5 by the year 2011. With the completion of 5 lines, the transportation distribution capacity will increase to as high as 40%.

Next is expansion of road construction. Pusan is a port city, so 77km of 10 auxiliary roads are planned for construction by the year 2001 for the smooth transportation of shipments through the ports, as Pusan is a port city, and 7 roads of 51km is under construction at present. 120km of main roads will be constructed by the year 2011, and 15 tunnels will be constructed chronologically for a smooth circulation network between regions. Next, construction of enormous traffic networks, As the central city in the southeastern economic bloc, highways connecting the nearby cities of Ulsan, Kimhae and Masan are newly under construction or being expanded and subway constructions are under way to link Pusan-Ulsan, and Pusan-Kimhae. In addition, new landing strips will be completed by 1997 for Kimhae International Airport, and direct flights will be scheduled to the Americas.

Increase in the road capacity, since it takes much time and financial resources to expand and supplement the transportation facilities, plans are being made to effectively improve the existing road capacity with small financial resource. Traffic System Management (T.S.M) is being improved by installing exclusive bus lanes, variable car lanes, one-way streets, and improving the traffic light system. In addition, in order to control

the traffic situation that has resulted due to the rapid increase of automobile, the 10-day operation system (inability to operate the car every ten days on the days that is the same as the last number of the car. For example, if the car number is 1234, the car is inoperable on the 4th, 14th and 24th), and car pool campaigns are in operation with the construction of a public cargo delivery complex, cargo terminal on the outskirts of the city and the inland container terminals to move the cargo traffic away from Downtown.

Next, I would like to talk about the traffic problems of Pusan.

First, I am going to refer to disharmony between the city structure and the traffic system. The traffic problem of Pusan is the special result of the structural change that has taken place in the transition process that followed the rapid economic growth and urbanization. Firstly, this sudden urbanization brought about the concentration of traffic in one area and causing a serious congestion, as the city was formed structurally in a simple style and all the functions were concentrated in the downtown area.

Next, I would like to talk about sudden increase of Vehicles. The basic cause of the downtown traffic problem of Pusan is the sudden increase in vehicles, especially the private owned automobiles. Among the vehicles that pass through the city, automobiles which have the lowest transporting capacity, accounts for 65.4 % of the total traffic, and among these, 70 % have only the drivers in the cars. Not only does this problem cause serious traffic congestion, it also brings about large wastes of public expenses.

Next, I would like to talk about problems of the public transportation. The main means of transportation of Pusan is the privately owned buses. Currently there are 45 private bus companies with 2,700 buses operating 174 routes. While the one subway line operating 32.5km transporting 510,000 people, the bus transports 2,860,000 people daily making the transportation ratio 43 % for the bus and 9.1 % for the subway. However, since there is no connecting system between the subway and the bus lines, the travelling distance is long and the average speed of the buses are 24.6km/h due to the serious traffic congestions downtown. This confusion reaches 189 % during rush hour which is far behind the number for other advanced countries. In addition, the confusion in subways also reach 197 % during rush hours. It is seen that the bus systems will continue to place the role of being the major means of transportation until Line 2 and 3 of the subway get completed. Therefore, the responsibility of the city government is to develop and put into effect various types of public transportations and expand on the existing public transportation priority policies such as the exclusive bus lane systems. Next, I would like to talk about pollutions. The use of automobiles inevitably produce various pollutions and brings about social losses such as the human lives. To date, air pollution resulting from automobile exhausts have not reached a serious stage, but the exhausts and noises are slowly emerging as an environmental problem.

Next, I would like to talk about direction of Pusan's traffic policies for the future. Up until now, the City of Pusan has undertaken various improvements such as the construction of the subway, roads, and parking areas as well as improvements in the operation of the traffic systems, and operated campaigns as the 10-day operation system and car pools as a means to solve the traffic problem of the city, however, the results were very slight. Plans are being made to implement a more active transportation policies to solve and improve the services of the bus systems for the establishment of a transportation culture that will help to solve the traffic problem. In order to enforce the traffic management policies, the City of Pusan will first execute a "Public Campaign for Green Traffic" on a large scale.

A Green Traffic Campaign is composed of 5 campaigns names. They are 'using public transportation', 'implementing 10-day operation system', 'using car pools', 'walking short distances' and 'observing traffic orders'. The first Monday of every month is designated as "Green Traffic Day" and all the government workers commute by public transportation to set an example for private companies and private citizens to also use public transportation. The 10-day operation system has been in effect for some time under the guidance of government agencies, but the campaign has spread to private citizens, and a 10% discount on vehicle tax is being given to vehicles participating in the campaign. At the same time, vehicles violating this effort is prohibited from parking in public parking lots and towed away above all when illegally parked. In order to activate the car pool system, various private organizations have started car pool service centres to assist with the programme, and there is a movement to reduce the toll gate fee of the expressways and tunnels for cars with 3 or more people. People using car pools are given priority parking and a reduction of 20% on the parking fee when parking downtown. Secondly, a vehicle ownership control is being imposed for better control of traffic. There is a move to pass the law that guarantees a garage for the car after it is purchased, and this guarantee is needed before the purchase of a vehicle. Also, for a household with more than one car, they will be subjected to a purchasing tax and registration tax that will be two times the amount for the first car. Studies are being done to implement heavy vehicle taxes. Thirdly, flexible working hours will be recommended to government agencies, organisations and companies to avoid cars concentrating at one time in one area during rush hours. Fourthly, studies are being done to apply a toll fee to vehicles entering the downtown area, and a reduction in traffic fees to companies that help in reducing traffic. Fifthly, by making the downtown parking fees higher than that of subway station areas and the outskirts, it will assist in preventing cars from entering the downtown area.

As the priority of the bus system which is the major means of public transportation for the people, the exclusive-bus lanes need to be extended, the bus routes should

be reasonably prepared, and zone buses should be established centering around the subway stations. In addition, deluxe limousine buses should operate between the airport and the deluxe hotels, along with express buses that run at night. On the other hand, in order to raise the transporting capacity of the subway, around station parking lots should be established to accommodate the interconnecting transportation systems, and install railways and elevated magnetic rails as a new means of transportation. And I would like to propose for the "Development of a Asia-Pacific Traffic Policy Meeting."

Pusan is the largest gateway on the Korean peninsula and the 6th largest international trading port in the world. Pusan is doing its best to attract the 2002 Asian Games, and contribute to the interactions between many cities in the Asia-Pacific region as well as the world by constructing a World Trade Centre and expanding the international airport and the maritime facilities. Pusan hopes that these interactions will in turn bring prosperity and peace to mankind. The reason Pusan is doing everything to solve the traffic problem it is facing, is because the traffic problems of large cities reduced the development of the city in the present times, and in turn get in the way of economic interactions and regional development between the regions of the global village we live in. In order to grow as an international city in the upcoming 21st century, Pusan will prepare various traffic policies to preserve the environment together with the people, and through this, form a healthy city traffic environment that is pleasant and safe to live in. This can only achieved by strengthening the transportation supply policies and establishing the basic traffic facilities, as well as developing a higher level of traffic control policies.

Lastly, the City of Pusan wishes to propose to all the participants of this Asia-Pacific Summit, the "Asian-Pacific City Summit Working-Level Conference on Transportation Issues" to help solve the traffic problems in each country. Through this meeting, we can exchange transportation informations that will help solve the different problems faced by each country and these exchanges will lead to the increase in the mutually beneficial relationships among the countries in the Asia-Pacific region. Thank you for your kind attention. (Applause)

Chairman Akasaki

Thank you Mr. Hong, Director of the Planning Management Section. The presentation described the basic traffic policy and issues of Pusan City, and directions in future traffic policy. In particular, valuable advice was received concerning "Asian-Pacific City Summit Working-Level Conference on Transportation Issues." I believe these suggestions merit consideration, and would like to discuss them in detail later.

This completes the presentation from each city. I would like to thank all of the participants for their cooperation.