

TRANSPORTATION POLICY-CASE STUDY OF KAOHSIUNG CITY

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Abstract: As the new terms of Kaohsiung Municipal Government, they have been spared no effort to build Kaohsiung into the “Oceanic Capital”, in particular since Mayor Frank Hsieh headed the municipal government team. To make it, transportation construction is the indispensable Lesson One. Through close teamwork of the entire municipal government staff, they strive to the great vision of bold transportation construction to make possible perpetual development, enabling all citizens to enjoy pleasant, comfortable traffic flows, free of barriers. Major transportation construction projects currently launched by Mayor Frank Hsieh and his entire municipal government team include notably the mass rapid transit systems, expressways, subways for current rails, High-Speed-Rail along with the efforts to win budgets to extend airports in the south. In mapping out transportation policies, it is aimed at defining the frameworks of transportation issues and ascertaining government orientations and priority orders of transportation constructions and taking firm command of the world trends so as to keep abreast of new milestones of the world.

Key Words: transportation policy

1. INTRODUCTION

1.1 Background

Kaohsiung is located in the south of Taiwan. The land area in Kaohsiung is 153.6 km². The population is about 1.48 million. Until 1998, each family conventional income is 1.19 million NT dollars per year. Transportation environment changes a lot after mayor Frank Hsieh. We take the aspects below to see the transportation situation in Kaohsiung.

(1) Organization

Before the term of office of mayor Frank Hsieh, there has been no special agency to deal with transportation policy in Kaohsiung City. Hence, each bureau proposes her major projects dealing with policy, such that, it is not easy to integrate all bureaus' ideas together.

Transport affairs are distributed and managed among different sectors, such as Engineer Bureau, Construction Bureau, and Police Bureau. There is no single special agency, so most of plans of transportation are executed independently. And most of the plans are always induced and planned at the moment of facing real problems.

(2) Public Transportation in Kaohsiung City

In Kaohsiung, there is no bus company operated by private companies. All city buses are owned by the only one organization, Kaohsiung City Government. There are 63 routes and 10 stations. The average of daily times is 2,427 with 98,614 people taking on per day. The total length of driving is 56,657 km. The total buses driven in a day declined from 488 in 1980 to 391 in 1999, and the population of passengers decreased from 139,708 to 102,114 respectively.

With nature geography characteristics, there are 9 public mass ships, with 4 navigation routes, operated among Chih-Tsin district and three districts beside the seashore in the west of Kaohsiung. The six ports accommodate 426 daily times carrying about 30 thousand people in a day.

The number of taxis remains stable around 10,000 from 1980 to 1999. It just transfers among different operation patterns of organization, including taxi passenger transportation team company, taxi transportation company, and taxi transportation company association.

(3) Private Transportation in Kaohsiung City

The number of cars and motorcycles continue to climb every year. At the end of 1999, there are 356,270 cars and 1,260,766 motorcycles. That means every 4 persons own a car and almost everyone has a motorcycle whilst the growth of road area is relatively slow and until 1999 it reaches 12,183,314 m² that means each car owns only 34.2 m², mere 70% with respect to 47.46 m² in 1980.

Roadside parking is the main parking way in Kaohsiung. Off-street parking is not popular. There are 388,634 parking spaces including 228,938 roadside parking spaces, 19,292 off-street open parking spaces, and 140,404 parking spaces of buildings.

(4) Intercity and international transportation

Intercity public transportation depends on 9 freeway bus companies, railway and domestic air transport. Kaohsiung International Airport is located at the eastern south in Kaohsiung with distance 9.3 km to Kaohsiung Railway Station, which is one of main CBDs in Kaohsiung. The airport has one concrete runway with length of 3,150 m and width of 45 m. It has other two high-speed taxiways, four low-speed taxiways, and the apron is 88,000 m². The number of passengers is 10,745 thousands, and the total weight of cargo is 140,493 ton. The major international navigation routes are HK, Japan, and east-south Asia.

(5) Kaohsiung Port

Kaohsiung Port is the most special feature in Kaohsiung. It is the most important port in Taiwan and plays an important role in the world too. The area in the port is 26.8 km². The water depth of the port is 16 m so that the port can accommodate vessels over 100 thousand ton and provide 153 vessels of all sorts at the same time. The amount of import and export containers keeps increasing annually; 3,913,108 TEU in 1981 and 6,985,361 TEU in 1999. There are also lots of people making earnings depending on the port-associated business, such as value-adding manufactures, logistics industries, etc.

1.2 Problems

(1) Organization issues

Kaohsiung has been lack of special agency of transportation for a long time. There is no independent department mapping out clear direction of transportation policy. One transportation plan is sometimes not coherent to another. Different directions of plans result in inefficiency and cost a lot. The comprehensive policy and integral plans may create sound transportation environment and need to be made by one expert department.

(2) Public transportation issues

Infrastructures of transportation in Kaohsiung are car-oriented. Most transportation plans are in the viewpoint of convenience for cars, such as improving road capacity and raising running speed. Lacking in human-oriented transportation environment results obstacles for public transportation. Bus stops are poor and sometimes without well connection to sidewalk which

is often taken as parking spaces by cars and motorcycles instead. Additively, deficient supply quantity of mass transportation, i.e. single government operator, few daily times and routes, and long headways, it is very difficult to develop public transportation under the old ideology.

(3) Private transportation issues

Kaohsiung City is facing two problems of private transportation. One is that demand of private vehicles continues climbing up dramatically. On the other side, supply of roads and parking spaces cannot catch up the growth of demand, especially when there are not enough off-street parking spaces and the situation that people illegally park on road is very common.

(4) Intercity and international transportation issues

Rail line cuts plane road networks severely in urban area in Kaohsiung. There are 95 intersections, including 18 elevated or underground crossings, 77 plane crossings, which cause huge impact to road efficiency and safety. The similar situations occur by intercity trips and trucks. The freeway goes through urban areas with too many ramps and puts heavy traffic loads on urban roads. Huge amount of intercity trips deteriorate this condition. As an industrial city with largest port in Taiwan, cargo trips, which bring many trucks, through the urban area usually increase loads on roads too.

1.3 Comparisons To Other County/City In Taiwan

In 23 counties and cities in Taiwan, Taipei City and Taoyuan County have most similar features of transportation environment to Kaohsiung City. Taipei is the center city of northern Taiwan while Kaohsiung is the southern one. Taoyuan is an industrial county with the largest international airport while Kaohsiung City also has many industries around and has the other international airport in Taiwan. Both of them are good references to Kaohsiung City.

(1) Transportation in Taipei City

Taipei is Taiwan's capital. Transportation in Taipei is always a model to the other cities. Taipei City government has a sound transportation organization department for a long time. There are also lots of transportation experts there. Discussions and interactions are frequent. Many of these factors make Taipei City have great advantages to do right things and become a global-view city.

The fundamental concept of transportation policy in Taipei is public transportation. The mayor promised the usage percentage of public transportation to reach 50% in his term of office. There are 14 bus and one MRT companies supplying public transportation service. The government also has related plans for bettering the environment for public transportation, such as bus exclusive lanes, transit facilities, and cost-free transit buses. They do much effort on sound pedestrian environment too, such as plan of motorcycle out from wall side, project of motorcycle parking curvature, new passenger passing signals, sidewalk renewing, etc. Recently the government integrates many value-added cards into only one card that may be used at any kind of public facilities, including bus, MRT, and even public parking lots. Its convenience will attract more people using public transportation. However, the most important key factor to let these policies proceed successfully and more easily is the cooperation and support from the citizens.

(2) Transportation in Taoyuan County

Taoyuan County is well known for international CKS airport. The 2nd terminal has also been built and operated in 2000. Due to the international airport, "Airport City" becomes the base tone to develop Taoyuan County. However, although Traffic Bureau has been established in 2001, there are still lots of problems waiting for solutions.

Because of the poor quality of public transportation, there is an obvious decline of bus trips from 1991 to 1999. Large-scale shopping mall is a special development phenomenon in Taoyuan County, but it always produces traffic bottleneck. In addition, not only the oppose force from the public, but the shortage of financial resources, many transportation policies are hard to set into action. Although facing so many difficulties, there are still many projects are being planned and built, such as MRT, LRT, HSR, connection road system, etc. The government really has tough tasks to accomplish.

(3) Special features in Kaohsiung City

Kaohsiung City contains various kinds of transportation mode. It has an international airport, and a world-competitive port. It is a standard land, sea, and air transportation city. The weather there is always sunny and bright. Except its own natural and artificial advantages, the wide hinterlands around Kaohsiung City make it full of vitality.

The nature resource is always our cherish treasure. The most special feature in Kaohsiung is the ocean. Almost half districts are facing the ocean. As one of important ports in the world, most of people's jobs are related to the ocean. It has distinguishing feature and contains many potential characteristics to be found out.

2. TRANSPORTATION VISIONS AND GOALS

2.1 Challenges Lying Ahead

Rising economic development and income prompt the needs for higher quality of lifestyle. In the future, lifestyle must transform itself toward division of residential zones from commercial areas. That is to mean significant rise in terms of the number of commuters who will, meanwhile, travel a considerably longer distance with mounting needs for mass transportation.

To live up to varied needs for transportation, one or a small number of varieties of transportation can no longer meet actual needs. Kaohsiung Municipal Government will, therefore, bring in diverse means of transportation for maximum possible performance through optimal combination to have such varied means of transportation traveling on the ways simultaneously in harmony. This symbolizes a significant lesson in transportation.

In Kaohsiung, a great number of transportation projects are to be unfolded one after another, notably mass rapid transit system, subway for the current rail, High-Speed-Rail, expressway, etc. When those huge projects are under construction, the entire city must inevitably face dark phases. Citizens must detour or face reduced or even closed passage, spending more time in the blocked transportation.

2.2 Future Visions

With so many challenges lying ahead, after Frank Hsieh becomes the mayor of Kaohsiung City, he has many dreams waiting to be realized. He and the associated transportation departments brainstormed and have established the vision structure of transportation policies of Kaohsiung City. These visions will create a great oceanic city for the citizens.

(1) Enjoy an unrestrained and far-ranging tour to Kaohsiung

It is aspired to return to Kaohsiung citizen unrestrained and far-ranging spaces. For this oceanic capital, the transportation policies must be combined six fundamental functions into a whole, i.e., functions of modern lifestyle, multifaceted leisure time, expertise & academics, finance & trading, distribution & transit, and technological production.

(2) Combine county & metro area transportation resources

The overall development of the Greater Kaohsiung Metro Area is centered in Kaohsiung City, with transportation construction to be carried out through three axes of east, north and south. Kaohsiung lies in the core of the Greater Kaohsiung Metro Area but gets its hinterlands and resources limited. The transportation policies of Kaohsiung should, therefore, aim at the central concept of "Oceanic capital". Besides, it should take the regional functions of entire Kaohsiung into consideration to have the resources soundly integrated.

(3) Dominate the world trends

The major transportation development trends currently prevalent in the world are considered as sure concepts for Kaohsiung City. For example, attaching importance to human dignity, transportation environments of perpetual development, sound division of labor for transportation systems, and intellectual transportation systems are all included in our transportation policies.

2.3 Transportation Goals

Transportation goals in Kaohsiung are derived from two aims. One is to solve the current transportation problems. The other is to achieve the visions. In short, we would like to create an environment for barrier-free and fluent traffic flow, carry out transportation construction in perpetual development, and enable Kaohsiung citizens to enjoy unrestrained and far-ranging transportation.

3. THEORIES AND CONCEPTS OF TRANSPORTATION

In recent decades, transportation territory has many important theories and new concepts developed. The spirits of them may be briefly concluded as below. Most of them are taken as the base idea for developing transportation policies of Kaohsiung City.

3.1 Transportation System Management (TSM)

Infrastructures of transportation cost a lot. The solution is not to ask more fantasy constructions. The question should be: how to use existing facilities more efficiently? Is there any method to reduce chance of traffic jams without build another road? How do we make more improvements under budget? By efficient management, connected traffic signal control may be one hint for that.

3.2 Transportation Demand Management (TDM)

If the facilities are exhausted and difficult to be improved, we should try to change the demand instead, such as redistributing traffic volume in different time and space, giving more real-time information to users, which is one branch in ITS, to avoid bottlenecks.

3.3 Transportation Oriented Development (TOD)

The position of transportation planning should be considered when land development is discussed. A tight connection between transportation and land may decide which kind of lifestyle will be created. And it usually brings less consumption of energy in the respect of transportation system planning.

3.4 Build, Operate, & Transfer (BOT)

Transportation projects sometimes exceed the finance capability of a government. And commercial companies always have more efficiency than government. BOT has given a way for a government to accomplish financial problems.

3.5 People Participation

In recent years in Taiwan, people awareness develops rapidly. Almost every kind of public issues are asked to be participated by the public, of course the transportation issue included. Human dignity education prevails. As users, it is reasonable and becomes a trend to let people know, give opinions, and support transportation projects.

3.6 Transportation Sustainability

Environmental sustainability has been highly discussed since 1990. Transportation is inevitable to have responsible for the environment protection. The promotion of usage efficiency of transportation modes, and efficiency of the whole system are highly concerned. Green public transportation pattern, such as AGT, hence becomes the main fashion.

4. POLICIES

Here in Kaohsiung, transportation policies are aimed at the fulfillment of the aforementioned goals. Until the goals are drawn up, it is needed to review the status quo, development trends of Kaohsiung as well as the world tide so as to take accurate command of the orientations to fulfill the concepts of “dignified order”, “efficient technology”, “fair reason”, “green environmental protection”, “all-people participation”, “safety & reliability”, “balanced development”, and “sound division of labor and cooperation”. Under such policies, the policies of transportation means, roads, transportation safety, parking, trucking, transportation ecology, transportation administration organization, external link and sea & air transportation development, as illustrated in Fig. 1, framework the oceanic capital oriented transportation policies.

5. PLANS

Our plans are developed from the above 10 policies. In each plan, there are several concrete highlight descriptions. Until now, some of them are fulfilled; some are being built or planned. All plans and policies are for achieving the visions and goals.

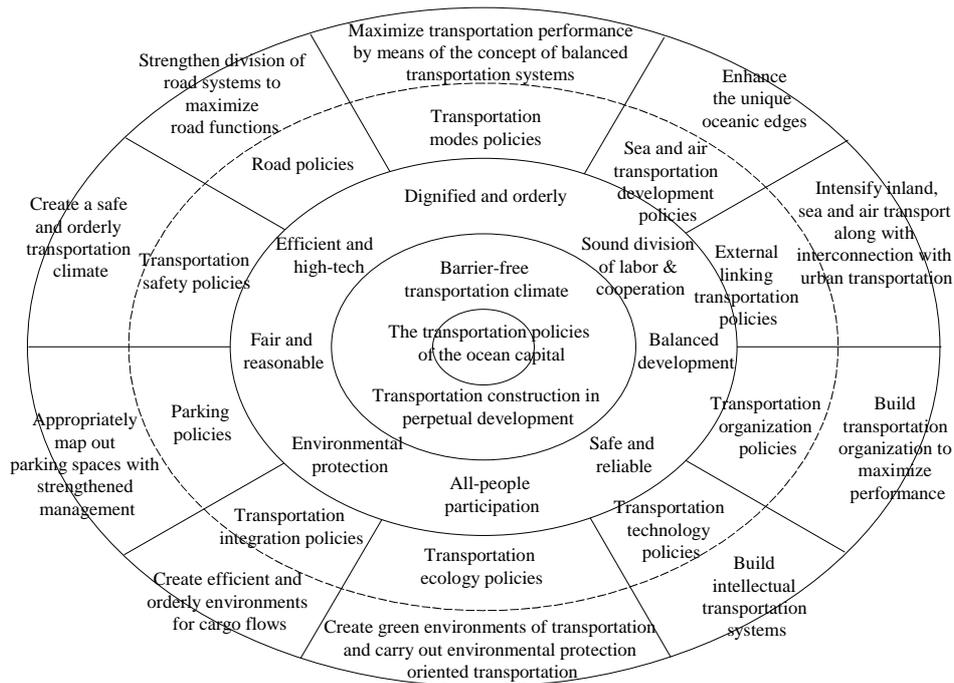


Figure 1. Framework of Transportation Policies

5.1 Mold Transportation Environment Aiming At Services Mainly To Mass Transportation And To Private Transportation As Well

As mentioned earlier, mass-transportation oriented policies, as worked out and adopted in Kaohsiung, are a sort of policy unanimously adopted throughout the world. Through such policies, it is better tried to win over public to make maximum possible utilization of buses, rail and mass rapid transit systems in an attempt to ease up transportation load in the urban area.

- (1) Deregulate city bus routes and license for the second city bus company.
- (2) Continually map out and review city bus routes.
- (3) Upgrade quality of bus services and phase out non-air-conditioned buses step by step.
- (4) Build mass rapid transit system at a quickening pace.
- (5) Map out Bus Transit Center.
- (6) Build subway in place of current rail.

5.2 Strengthen Division Of Road Functions And Performance

- (1) Build expressway systems at quickening paces.
- (2) Build highways in phases according to urban planning.
- (3) Strengthen planning and control of the routes for makeshift vehicles.
- (4) Check and maintain bridges, underpass structures on a regular basis to assure the safety.
- (5) Establish plans to improve traffic flows at bottlenecked sections and intersections.
- (6) Strengthen crackdown upon unauthorized establishment, scrapping, damage of marking lines, signs and road blockade.

5.3 Build Safe And Orderly Transportation Environment

- (1) Continue serious enforcement of traffic regulations.
- (2) Strengthen traffic safety publicity and education. Traffic safety education and activities are

being continually enforced. Seven projects as promulgated by the Executive Yuan are to be enforced every year. Bring down accident rates resulting from student offenses year by year.

- (3) Materialize vehicle safety examination system.
- (4) Improve nighttime lighting systems for streets.
- (5) Review and control over streets (intersections) subject to accidents (major incidents).

5.4 Appropriately Map Out Parking Spaces And Strengthen Parking Management

- (1) Encourage private investors to build added parking spaces with attractive incentives. Strengthen crackdown upon unlawful parking in the peripheral area.
- (2) Appropriately adjust parking rates in line of due time and location for higher turnover rate. Increase parking unit turnover rate to 10 parking uses a day.
- (3) Appropriately map out motorcycle parking spaces.
- (4) Encourage construction of off-street parking garages at a quickening pace to reduce street-side parking step by step.

5.5 Create Efficient And Orderly Environment For Cargo Transportation

- (1) Map out exclusive container truck ways in the harbor area. Win over full-amount subsidy from the Executive Yuan.
- (2) Control large-scale truck routes and time periods.
- (3) Strengthen crackdown upon overloaded and speeding trucks. Bring down 5% of truck accident rates within one year.
- (4) Materialize enforcement of hazardous article carriage regulations.

5.6 Create Green Environments Of Transportation And Promote Environmental Protection Oriented Ways Of Transportation

- (1) Promote demo pedestrian walk project.
- (2) Continually promote inspection over exhaust gas discharged by automobiles and motorcycles.
- (3) Establish exclusive lanes of bicycles.
- (4) Establish bicycle parking spaces at public transportation stations.
- (5) Build sound systems to beautify construction fences.

5.7 Bring In Ultramodern Technologies And Information And Build Intellectual Transportation Systems (ITS)

Make use of ultramodern technologies to release traffic jams and upgrade the quality of public transportation.

- (1) Map out computerized traffic control systems and key avenues of the city into overall management through transportation control systems so as to boost road capacity and service level.
- (2) Satellite city bus navigation systems.
- (3) Satellite taxi navigation systems.
- (4) Build comprehensive parking information indicator systems.

5.8 Strengthen Traffic Planning And Integration

To prevent ineffective performance resulting from possible departmentalism, establishment of the Bureau of Transportation is essential handle coordination, communication and integration of transportation policy related planning, projects, supervision, management and enforcement

in package.

- (1) Establish authority to exclusively take charge of transportation affairs. The Articles of Organization have been referred to the City Council for review and the Bureau of Transportation will be established as soon as the Articles pass the review.
- (2) Update and suffice transportation related laws.
- (3) Handle horizontal coordination and communication on transportation affairs. Call the “Road Traffic Safety Supervisory Meeting” once per month, “Traffic Affairs Committee Meeting” twice per month.
- (4) Integrate planning, engineering, supervision, management and enforcement in transportation policies.

5.9 Increase Values Of International Air Services To Bring Added Convenience To Tourists

For the sea surrounded island of Taiwan, aeronautic transportation will become the most important means to connect offshore islands and entire world. Here at Kaohsiung Municipal Government, therefore, it needs to be tried to win decision to establish the south Taiwan airport at Kaohsiung, build external linking systems of the airport and public transportation systems, as the goals of our efforts.

- (1) Win final government decision to establish the south Taiwan airport at Kaohsiung. To continue the efforts to win final government decisions.
- (2) Build and upgrade external links and public transportation systems for the airport. To cut short the travel time between downtown Kaohsiung and the airport to less than 30 minutes within two years.

5.10 Demonstrate Unique Oceanic-Oriented Advantages Of Kaohsiung And Integrate Transportation Systems Of The Entire Region

Integrate, coordinate with, map out and integrate the oceanic policies to demonstrate unique oceanic-oriented advantages of Kaohsiung to build Kaohsiung into an oceanic capital, as the catalyst to boost economy of entire south Taiwan.

- (1) Build Blue Oceanic Highway.
- (2) Map out future mass rapid transit system networks for Kaohsiung to combine Kaohsiung City, Kaohsiung County, Pingtung County, i.e., the entire Greater Kaohsiung into integrated traffic routes.
- (3) Map out and integrate bridges and road systems into a whole.

6. CONCLUSIONS

Kaohsiung is the largest city in south Taiwan. There are vibrant activities in all aspects, and the bustling Kaohsiung Port exceptionally gifted geographical resources and folklore culture. With all those advantages, Kaohsiung is an optimal choice to build an oceanic capital. Transportation is the first indispensable to develop an oceanic capital. In the advent of the new oceanic-oriented epoch, the entire Kaohsiung Municipal Government is supposed to reconsider its transportation policies in an oceanic-oriented vision.

To have the aforementioned objectives come true, the entire Kaohsiung Municipal Government team is aspiring to “sea, air port project”, “constructing of functions of the regional transportation hub”, “developing public transportation systems”, “building the city/harbor mechanism into a whole”, “completing urban area expressway systems”, “sound infrastructure construction through overall efforts” as the key guidelines through the concepts of “dignified order”, “efficient technology”, “fair reason”, “green environmental protection”,

“all-people participation”, “safety & reliability”, “balanced development” and “sound division of labor and cooperation”. In the short-term, we will launch some routine, low-cost measures for maximum possible utilization of resources to boost efficiency of transportation. In the mid- and long-term, it is suggested to launch an overall review of the restriction of the regional land zoning in line with the regional characteristics to develop conditions essential for history and future urban competition, in combination of fundamental functions into a whole, i.e., “functions of modern lifestyle”, “multifaceted leisure time”, “expertise and academics”, “finance & trading”, “distribution & transit and technological production to ensure balanced urban development”.

In recent years with number of powered vehicles growing by leaps and bounds, and with restriction for road spaces to grow, it shows that human beings are running insufficient road spaces. Besides, the existent road systems have lacked sound planning for reasonable functions and in unsatisfactory connecting systems. As a result, the road systems have been in unsatisfactory quality of services. New teams of Kaohsiung Municipal Government, consider that their bounden responsible to remove the aforementioned bottlenecks of transportation through close teamwork in the days and years ahead.