

TOWARDS A SUSTAINABLE RATTANAKOSIN

STRATEGIC PLAN

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PREFACE

This strategic plan 'Towards a sustainable Rattanakosin' is one of the operational plans as foreseen in the Fifth Bangkok Metropolitan Development Plan 1997-2001. It has been developed by a projectteam of the Bangkok Metropolitan Administration, with the assistance of many stakeholders and experts from within and without the Bangkok Metropolitan Administration.

I want to acknowledge the great support from the ESCAP and from the Dutch government. The ESCAP has assisted us with guidelines and manpower to set up this strategic plan. The Dutch government supported us by sending Klinkers Public Policy Consultants who have taught us the methodology of an integrated and interactive approach towards traffic and transport problems, an approach that has been implemented succesfully in The Netherlands and which has been used also to design the policy with respect of the construction of transnational infrastructural networks of the European Union. The Dutch government also organised an elaborate workshop in The Netherlands, which have been most useful for the projectteam that had the task to develop this strategic plan.

I want to thank in particular the stakeholders and experts who have been willing to participate in developing this strategic plan throughout the several phases of this program. Without their help, creativity and wisdom the BMA would noy have been able to design this plan.

Signed by Mrs. Nathanon or Mr Ksemsan?

INTRODUCTION

A densely populated city like Bangkok attracts a vast amount of traffic and transport movements. This is recognised in the Fifth Bangkok Metropolitan Development Plan 1997-2001. This Fifth Development Plan will be executed by several operational plans, one of which will be in the field of traffic, transport, and public utilities.

The strategic plan 'Towards a sustainable Rattanakosin' is one of these operational plans to implement the Fifth Development Plan. It has been developed by extensive public participation. Though it is operational in the context of the Fifth Development Plan it still is of a strategic nature since it contains a lot of programs and plans to be developed. The complexity of the problems, generated by our huge traffic and transport system, cannot be solved overnight. We need a step by step approach.

The first step was the emphasis on traffic and transport in the Fifth Bangkok Metropolitan Development Plan, the second step is this strategic plan 'Towards a sustainable Rattanakosin', and the third step will be the accomplishment of the development of the concrete programs in this strategic plan. From then on many concrete actions will be put into implementation. I expect these concrete programs to be ready at the first half of the year 2000.

Before one starts to read this strategic plan some observations have to be made. In the first place it should be noted that this plan is based on extensive consultation of the public. In the first phase over 300 stakeholders have been consulted on the question what they perceive as being the most stressing problems of traffic and transport in the Rattanakosin area, and on the question what should be the major solutions for these problems. The results of this consultation has been concentrated in an Anthology, filled with several thousands of quotations of the interviews. An interesting aspect of this consultation is the fact that many stakeholders perceive problems in a wider area than traffic and transport only. Somehow the field of traffic and transport is recognised as the nucleus of a lot of problems in other fields of society among which cultural aspects, elements of land use and physical planning, economic issues, institutional aspects, etc. This asks for a broad approach towards the traffic and transport problems, which cannot be solved by confining ourselves to installing new traffic lights and strengthening the law enforcement; we need to look further. Even far beyond the boundaries of the Rattanakosin district. The traffic and transport problems in that district originate for a great deal from outside Rattanakosin. Therefore we have to find for a great deal the solutions for Rattanakosin outside that district.

On the basis of this Anthology a series of so-called Problem and Causes Analyses have been designed, large schemes that indicate rather precisely the root cause of the problems, as put forward by the consulted stakeholders. These schemes contain the material for the diagnosis: what is wrong and what is the cause of that? As long as we do not diagnose precisely the 'illness' we might come up with the wrong 'therapy'.

Finally this strategic plan has been developed, filled with many programs, aiming at eliminating the root causes of the problems as indicated in the Problem and Cause Analyses on the one hand, and aiming at fulfilling the type of solutions as put forward by the stakeholders in the consultation on the other hand. A draft of this strategic plan has been submitted to public participation in order to check if the proposed programs and plans are suitable indeed for solving the noted problems. So, from the beginning until the end of this process, public participation (as corner stone of the Fifth Development Plan) has been

organised in order to improve the governmental decisionmaking on the one hand, and to gain involvement and commitment for the measures to be undertaken on the other hand.

This integrated approach is not without serious consequences. It means that the effectiveness of this strategic plan is completely depending on the overall implementation of the programs of the strategic plan. There is no room for making priorities or for some pilot projects or experiments on a small scale. The problems caused by our traffic and transport have negative effects far beyond the specific area of traffic and transport as such, and therefore can only be solved effectively by this all-encompassing integrated approach. Partial solutions will not solve anything, instead they will increase the problems. Weak ‘therapies’ will make the ‘illness’ far worse. The implementation of this integrated approach requires the utmost of our political and administrative courage and skills. Courage and skills to implement measures that are unpopular but inevitable. If we want to have a traffic and transport system – as an effective instrument for further economic and social development - that is equal to the standards of large agglomerations like London, Paris, New York, Amsterdam etc. we have to accept that this does not survive without the same drastic measures that those governments perceived as to be inevitable. We cannot have the cake and eat it too.

CHAPTER 1

IMPROVING THE QUALITY OF MOBILITY

1. Introduction

Improving the quality of mobility in Bangkok, moreover in Rattanakosin, is based on five principles:

- The ‘stand-still-principle’, aiming at constraining and regulating mobility by individual cars to reduce the ownership and the use of cars.
- The ‘jump-forward-principle’, aiming at a considerably raising of the quality of public transport as a real alternative to using the car.
- The ‘getting-through-principle’, aiming at enhancing the accessibility of important economic, social or cultural centers.
- The ‘getting-around-principle’, aiming at reducing the need for mobility by establishing rather news instruments.
- The ‘compact-planning-principle’, aiming at using physical planning in such a way that it reduces the need for moving too much from home to work and vice versa.

2. Constraining and regulating mobility of individual cars: stand-still-principle

Due to the explosive growth of our national economy the traffic and transport grew even faster. We are facing now a ‘traffic infarct’. Many hours of the day the streets in Bangkok in general and in Rattanakosin in particular are jammed with cars, buses, lorries, motors, tutuks etc. This is bad in many respects. We loose part of our national income, so from an economic point of view we must try to get rid of those traffic jams as soon as possible. It is also very bad for our health, for our attractiveness for tourists, and for preserving our cultural heritage. We have two options to solve this. One is: constructing more roads, more (elevated) expressways, more tunnels and more bridges. However, that option will lead Bangkok to a disaster since it is well known from experiences all over the world that more infrastructure leads inevitably to more cars. This option will lead to a city that is facing traffic jams from the early morning until deep at night, in the end ‘dying from a traffic infarct’. A city where people cannot live anymore to reasonable standards of living conditions. The second option is a) to reduce the number of vehicles, b) accompanied by measures to optimize the use of the existing infrastructural network, and c) supported by a far better public transport system. An integrated approach with measures that partly will be non-popular, partly will be welcomed. There is no other option if we want to keep Bangkok in the center of our cultural, social and economic activities.

We have to choose for the ‘stand-still’ principle. We cannot afford any further growth of vehicles, therefore we cannot afford any further growth of infrastructure beyond the infrastructural programs and plans that have been approved of already by the government.

2.1 Pricing measures

Section road pricing

Action xx Pricing prime time and prime place

Explanation Road pricing is asking a levy from vehicles which want to drive on specific roads, on specific hours of the day; so, on prime time and on prime place. Since

time and place are scarce goods they must start paying for that. This is different from toll. Toll is used to finance infrastructure that has been constructed with the input of the private sector. Therefore, the private sector is allowed to demand for toll. Road pricing is a governmental measure – not to finance the construction of infrastructure – but to force drivers to think in terms of options:

- Do I really need to use the car or could I move with public transport or a bike?
- Do I really need to use that specific route or could I choose for another road?
- Do I really need to drive on that specific hour or could I go earlier or later?

If the driver chooses for using the car, on that specific road on that specific hour he has to pay a price for that. If he does not want to pay that price, he has to choose for other options. Thus, road pricing is an effective and socially acceptable instrument to a) spread the use of vehicles during the day-time and to b) reduce the number of vehicles altogether, thus reducing traffic jams. Road pricing does not need to be in effect during the whole day. It can be effectuated from 7-9 in the morning, thus alleviating the early morning traffic jams. An overall program to establish road pricing on vulnerable points in the city, especially around the Rattanakosin area, will be set up, including aspects of physical planning, landuse, construction, technology and finance. This measure should be understood within the concept of ‘variabilisation of costs’, meaning that drivers need to enhance their awareness with respect to the costs of driving a vehicle: the more you want, the higher the costs. This is exactly the same principle as in using for instance the telephone, or electricity: the more you use the more you pay, and on certain hours it is more expensive. So, you have to choose.

Section vehicle pricing

Action xx Raising the price of the car

Explanation Another unpopular but inevitable measure in the area of ‘variabilisation’ is raising the price of the vehicles, especially of the individual car. On the basis of the ‘stand-still-principle’ we have to deter people from buying a car. A program will be set up to introduce higher taxes on cars. Thus influencing downward the ownership of vehicles.

Action xx Introducing levies on parked cars in residential areas

Explanation Another measure to influence the ownership of vehicles in a way that it reduces the overall number of vehicles is by introducing a license system that allows the owner of the vehicle to park the vehicle in a certain area near the residential home. A program will be set up to establish such a license system and the price for that license.

Section fuel pricing

Action xx Raising the price of the fuel

Explanation The forementioned measures (higher car prices and license system) aim at reducing the ownership of vehicles. Raising the price of the fuel is meant to reduce the use of the vehicle. A program will be set up to raise the price of the fuel to decrease the number of car movements.

Section parking

Action xx Rearranging the parking facilities

Explanation Due to the overwhelming number of vehicles we are facing a huge parking problem, especially in precious areas as Rattanakosin. We need to solve this. Not by constructing more parking space, but by establishing a program that reduces the overall parking capacity, thus forcing car drivers to choose for other means of transport. A program that includes the construction of underground parking garages, and extensive levying parking in non-residential areas. The program includes also the construction of special parking places for taxi's and tutuks.

3. Improving public transport: jump-forward-principle

While the ownership and use of private vehicles should be brought to a stand-still, our public transport system should jump forward. Compared to the effectiveness and the practical use of the private car the public transport system is outdated: it is old, ill-maintained, not attractive, not comfortable, not clean, not safe, not fast, not reliable etc. It is by far not a real alternative to the private car, or the moped, or the motor. We have to change that drastically. We cannot afford to set up a lot of programs that aim at constraining the ownership and use of cars, and leaving the public transport system as it is. The present standard of public transport has to be lifted considerably in each and every respect: perfect reliability, good comfort, nice speed, good cleanness, superb safety, fair price, effective accessibility (for disabled). In many western countries governments have understood that programs to curtail the private car need to be flanked by programs to enhance the use of public transport. We have reached the point to set steps into that direction too.

3.1 Improving the quantitative and qualitative supply of public transport

Section enhancing the variety of supply of public transport

Action xx Rapid mass transportation

Explanation A big agglomeration like Bangkok needs a great variety of means of public transport. At the bottom of the whole transportation system vehicles like mopeds, tutuks and taxi's provide us with sufficient capacity for the transport of small numbers of people over relatively short distances. However, at the top of the overall public transport system we lack some important instruments. Systems of rapid mass transportation are needed to transport large crowds of people very rapidly over long distances: subways and light rail systems. A program to fill this gap has been set up already and will be implemented in different stages soon.

Action xx School buses

Explanation Many people take their children to school by private car and many good schools are in Rattanakosin. That is adding an extra pressure on the traffic jams in that area. The main reason for bringing the children is that the parents have reasons to believe that public buses are not safe or clean enough for their children to use. By introducing a system of school buses for the schools in Rattanakosin that have regular stops in the other residential areas of Bangkok, a massive flow of private cars entering Rattanakosin at the beginning and end of school hours can be avoided.

Action xx	Better access for disabled people in Rattanakosin and to the public transport
Explanation	Transportation for disabled people in Rattanakosin is very difficult. Pavement are very often blocked because they are used for other purposes. Also bus stops and buses themselves are not (easy) accessible for disabled people, which makes it impossible for them to be mobile in Rattanakosin. Programs will be developed to make pavements, bus stops and buses better accessible. Also the possibilities to create special means of transport for disabled people will be researched.

3.2 Taking the people's interests as point of departure

Section comfort and safety

Action xx	Good comfort, cleanness and safety
Explanation	Vehicles of public transportation should be clean, comfortable and safe. The client should feel at ease when using means of public transportation in Bangkok. Special attention should be given to target groups like disabled people, elderly people and children. A program on enhancing comfort, cleanness and safety of the public transportation system of Bangkok will be set up.
Action xx	Public toilets
Explanation	A program will be set up to install more – safe and clean - public toilets in the neighbourhood of bus stops.

Section pricing

Action xx	Fair price
Explanation	Transport costs money. Governments have to decide whether they subsidise public transportation, providing thus the public with a low price, or leave it to market parties to set the price. In the long run it is foreseen that all over the world public transportation will be integrated in normal market conditions. It will be a commodity as bread, or water, or cloths etc. In view of that perspective we have principle to leave it to market parties to set fair prices in public transportation. In cases in which certain parts of the people might suffer from unfair prices government will take the appropriate action to alleviate this problem. A program will be set up to cover the terrain of fair pricing in public transportation.

Section enhancing awareness

Action xx	Awareness of public officials of the consequences of their decisions on public transport
Explanation	Public officials are often not aware of the effect that their decisions could have on public transport. For instance by traffic measures or creating facilities in Rattanakosin that attracts many people or obstruct the efficient flow of public transport. If the are trained and convicted that the better and proper use of public transport can be influenced by many causes that are the effect of their decisions and behaviour, public transport will find less restraints.

Section enhancing awareness

Action xx People know

Explanation It is a known fact that car drivers are very reluctant to use public transportation. And they are right. As long as the quantity and quality of our public transport system is as poor as it is nowadays we cannot blame car drivers for refusing to participate in the public transportation system. However, while we are working at improving its quantity and quality we also need programs to make those citizens understand that they themselves are part of the problem of a city that tends to be a place where normal human beings have a very hard time to live a normal, healthy life. We have to make them aware of the fact that they are partly responsible for this. If they do not change their habits and keep on going to use the car at whatever price, then even governmental efforts to improve the quality of public transportation will fail. Therefore, programs will be set up to enhance the public awareness about the personal and individual role they have to play in traffic and transport with respect to recapturing living conditions at a reasonable standard.

Section public participation

Action xx Involvement and commitment

Explanation To ask the people to be aware of one's own responsibility is one thing, to grant them a fair share in the decisionmaking process is another thing. People should be involved in the pro's and con's of governmental decisionmaking in order to acquire commitment of the people. Only then we may assume that there will be a basis for cooperating with measures that are relatively unpopular. In the chapter on fundamental issues we shall deal with these aspects.

3.3 Having the private sector to play an important role

Section private sector

Action xx Public transportation as private enterprise

Explanation In many places in the world we see that governments shift their responsibility for public transportation towards the private sector. The government keeps control on issues like safety, environment, overall quantity and quality of public transportation, but leaves it up to the private sector to supply the public with transportation on an adequate level against adequate prices. A program will be set up, including new laws, where and when necessary, to enable the private sector to take a leading role in managing the public transportation.

Action xx Clear and transparent contracts

Explanation If the relations and obligations between government and private companies for public transport are clear, there is no need for extensive legal disputes and court cases between them to enforce them to stick to their obligation in providing an efficient system of public transport. Lawyers will look into the existing contracts to find and solve all parts of them that are causing these disputes.

Action xx Training of bus drivers

Explanation A program will be set up to induce the private sector to set up training sessions for the staff and for the (bus, train) drivers, focusing on improving the quality of the service.

Action xx	Information
Explanation	A program will be set up to induce the private sector to set up a well elaborated system of route and road information in order to inform the client about the time of arrival of the next vehicle, about possible traffic jams and delays, about alternative means of public transportation.

3.4 Physical planning following the interests of public transport

Section priority to public transportation

Action xx	Public transportation is leading, physical planning is following
Explanation	As is the case in most countries in the world the physical planners always have the lead. They plan areas for work, living, industry, recreation, and leave it up to public transportation to find its own way to get the people from A to B. That's why many clients of public transportation perceive public transportation as a system that picks you up at the wrong place and brings you to a place where you do not want to be. This has to be changed in the coming ten years. Concepts of physical planning will be following concepts of good public transportation. A program will be set up to design the most appropriate public transportation network for Bangkok in general and for Rattanakosin in particular, to be followed by subsequent physical plans instead of the other way around.

Action xx	Free bus lanes
Explanation	A program will be set up to increase the number of free bus lanes.

4. Improving accessibility: getting-through-principle

Section accessibility of important economic centers

Action xx	Accessibility of sea- and airport
Explanation	The sea- and airport are important centers of economic activities. In an era of 'just-in-time-transport' we cannot afford to have the shipment of containers etc. delayed by many hours or days due to traffic jams. Therefore, an elaborate program will be developed to make sure that sea- and airport can be reached in time at all hours of the day and the night.

Action xx	Accessibility of other economic, social and cultural centers
Explanation	What applied for the sea- and airport is applicable to other important economic, social and cultural centers in Bangkok, especially in the Rattanakosin area. Special plans for unhindered accessibility of market places, department stores, hotels, temples, museums, schools, etc. will be developed.

Action xx	Accessibility of markets
Explanation	Market vendors use pavements and walls of buildings to sell their goods. Thus causing a lot of problems for pedestrians to walk through. Many motorists and moped owners park their vehicle near vendor stalls. This situation is difficult and also dangerous in cases of fire or explosions. A program will be set up to

keep the market places doing their traditional business without all the problems by occupying pavements, parts of streets, too many parked motor etc.

5. Developing new instruments: getting-around-principle

Section reducing mobility by special means

Action xx Transfer stations

Explanation A lot of drivers use the car for commuting purposes, causing traffic jams and parking problems. A program will be set up to have a series of well equipped transfer stations at the outskirts of Bangkok where they can leave their car in the morning in a safe parking lot, equipped with a garage where the car might be maintained, fuelled, cleaned, with shops to do the necessary shopping before getting back home in the afternoon. From that transfer station they will be transferred in clean, safe, rapid and environmentally safe vehicles that run continuously from those transfer stations to all parts of inner Bangkok. For BMA officers special vehicles will transfer them from those transfer stations to the BMA office.

Action xx Tele-working and tele-learning

Explanation A successful instrument to reduce unnecessary use of cars is working – either the whole day long, or part of the day, especially during rush hours – from home or from special offices outside Bangkok through online computer connections or through stand alone personal computers, using fax and email as means of transfer of messages to and from the head office somewhere in Bangkok. A program will be developed to introduce gradually the concept of teleworking. The same applies for school children. At present a huge lot of car movements are made to bring children from home to school and vice versa. The present bus system is not good and safe enough to be an adequate substitute for parents taking the car to transport the children to and from schools. This problem can be solved partly by introducing – gradually – decentralised units equipped with personal computers where children can be taught through computers, at least during rush hours, in order to prevent them from trying to get in school at the moment the traffic is hectic and dangerous.

Action xx Bike lanes

Explanation The bike is a very effective and cheap means of transport. A program will be set up to enhance the use of bikes by a) constructing a well designed network of special bike lanes throughout Bangkok and in Rattanakosin in particular, and b) by arranging cheap prices for buying bikes.

Action xx Water transport

Explanation A program will be set up to investigate the feasibility of transport of people and goods through the canals.

Action xx Car sharing

Explanation Many people want to have their own car. That is not possible. We need to introduce new concepts that provide people with the opportunity to use cars without creating problems that cannot be solved anymore. Car sharing is such a

new instrument. It is an instrument in which the use of the car is uncoupled from the ownership of the car. It is an new instrument between individual transport and public transportation. Examples of car sharing are: hiring a car, car dating, taxi, hitch hiking, carpooling. See below.

<i>Individual car</i>	<i>Car-sharing</i>	<i>Public transportation</i>
Ownership	Car rental	Train
Lease car	Car dating	Bus
	Taxi	Tram
	Hitch hiking	Subway
	Carpooling	

Car sharing is a symbiosis between individual ownership and public transportation. An extensive program will be established to further the introduction of these examples of car sharing. It will reduce extensively the traffic jams, it is much more environmentally friendly, and it reduces the parking problems considerably.

Action xx	Telematics
Explanation	<p>Modern computer technology can be used to reduce effectively the number of traffic jams. A program will be set up to introduce the most modern electronic techniques to further</p> <ul style="list-style-type: none"> a) <i>dynamic traffic management</i>: traffic monitoring and controlling systems, traffic information centres, floating car data systems (=automatic positioning cars), access-dosing, target group prioritisation b) <i>travel information</i>: in car route navigation, in car travel information systems, out car static and dynamic parking and travel information c) <i>safety</i>: automatic accident warning systems, intelligent speed limit adaptation systems, cruise control, automatic moving of cars, electronic car plate recognition d) the <i>just-in-time</i> flow of public transportation and of the (combined) transport of goods.
Action xx	Using infrastructure to the maximum
Explanation	<p>Our infrastructure has been designed and constructed in such a way that its use is not optimal. We could improve the flow of traffic and transport by reconstructing our infrastructural network, installing at the same time modern technology . A program will be developed.</p>
Action xx	Flexibilisation of work
Explanation	<p>At present the majority of the people go to work and go home at the same time, thus causing big flows of traffic. A program will be set up to introduce the concept of flexibilisation of work, meaning that some people might go to their office from 7 tot 3 and others van 9 tot 5 and others van 11 tot 7, etc. So by introducing structurally different working shifts.</p>
Action xx	Flexibilisation of school times
Explanation	<p>At present children are going to school at the same time in the morning during rush hours. That is unsafe, unhealthy and causing extra traffic jams.. A program will be set up to introduce the concept of flexibilisation of school times,</p>

meaning that school times will not exactly overlap work times, especially in the morning.

Action xx Enhancing walking

Explanation A program will be set up to enhance walking. This includes a radical improvement of the quality of pavements, and of pedestrian crossings. There will be experiments with closing streets for vehicles on Sundays, thus enhancing unhibited pedestrian walking

6. Physical planning and land use: compact-planning-principle

Section concentrating working and living

Action xx Closing the distance

Explanation As is the case in many agglomerations in the world city planners developed concepts to bring the residential areas further and further away from the working areas. That is one of the most important reasons for the tremendous flow of traffic in the rush hours. The distance between the place where people live and where they work has grown too far. We need new concepts on concentrating working and living as close as possible. A program for city planning in this sense will be established.

Section removing activities

Action xx Rearranging the location buildings

Explanation During the years activities have been settled on places where they cause traffic and transport problems: ministerial departments, market places, schools, hotels. There will be a program to investigate if it is necessary and feasible to remove certain activities to other places. Especially governmental offices which do not maintain direct relations to the public might better be located outside the Rattanakosin area. Also schools might be subject to move to another place since they attract a large amount of cars by bringing the children to and from schools. On the other hand, to keep market places in Rattanakosin might be very important since they are the nucleus of many social activities and of great interest for the tourist sector.

Section public works

Action xx Efficient working on roads

Explanation Often public works at roads are the cause of severe traffic jams. When one department has finished the job some weeks later another department starts breaking up the road again for other works. That is not efficient, nor is it wise to do all this work only in daytime. A program will be set up to coordinate public works, to concentrate those work at night and to finish those works as soon as possible.

Section electricity supply

Action xx Better electricity supply causes less maintenance

Explanation The way the electricity supply in Rattanakosin is provided and maintained causes many troubles on the streets which lead to timely road blocks and causes traffic jams. A program will be set up to improve the power supply and its maintenance to avoid this problem.

CHAPTER 2

IMPROVING VALUES OF ENVIRONMENT, NATURE AND SAFETY

1. Fighting pollution

The quality of life in Bangkok is endangered by the increasing problem of air and noise pollution. The total traffic and transport system is for a great part the cause of this problem. It is very difficult to walk the streets without being choked by the vast amount of toxic fumes by cars, buses, motors, tutuks and lorries. The health of everyone who needs to be on the roads – especially children walking to their schools, police officers ruling the traffic flow, tourists on sight-seeing and vendors at market places – is at stake. Even car drivers risk severe health problems since most cars do not protect the drivers against the fumes. For people who want or need to be mobile we need to come up with drastic measures to recapture a quality of life at a reasonable standard. Therefore, some overall programs to fight pollution within the traffic and transport system will be introduced in this chapter.

1.1 Fighting air pollution

Section individual cars and motors

Action xx Introduction of catalysts

Explanation An increasing amount of governments, especially in the USA and in the European Union, have introduced over the last ten years programs to introduce so-called 'three-way-catalysts' in engines. These catalysts improve the quality of the exhaust fumes. An overall action plan – based on the US and EU programs - will be made to introduce catalysts on the largest scale possible.

Action xx Introduction of unleaded fuel

Explanation Leaded fuel is rather toxic. By the year 2000 some states in the USA and all the states in the EU will forbid the use of leaded fuel. The introduction of unleaded fuel will be part of the just mentioned overall action plan with respect to catalysts.

Action xx Setting standards for good maintenance of public busses

Explanation The lack of government investment in public transport and the low income for the bus companies due to the low fares are no guarantee for good maintenance of the buses. This has as a consequence severe noise, soil and air pollution in Rattanakosin. A program will be set up to guarantee the standard of maintenance of the buses operating in Rattanakosin

Section tutuks

Action xx Tutuks running on electricity

Explanation Tutuks are a very convenient means of transportation. However, they cause a large part of the air and noise pollution. Therefore a program will be developed to design and introduce a new model of tutuks, running on electricity.

Section buses and lorries

Action xx Buses and lorries running on natural gas

Explanation In several big cities, as for instance in Jakarta in Indonesia, there are buses running on natural gas. In view of the need of enlarging considerably the public

transport system we need to introduce a bus fleet running on natural gas. Programs in other countries will be studied and introduced.

Action xx Buses and lorries running on electricity
Explanation What applies for buses and lorries running on natural gas will be studied equally for the purpose to run them on electricity.

Section fuel

Action xx Introduction of clean fuel
Explanation As long as we are not able to run buses, lorries and tutuks on natural gas or electricity we need to emphasize the necessity of getting cleaner diesel fuel. A program will be set up to provide drivers with diesel with a quality to European standards.

Section maintenance

Action xx Introduction of yearly inspection
Explanation Cars, older than three years, have to undergo a yearly inspection in order to assess if the car is still fit to be on the roads. Fit in terms of safety on the one hand and in terms of pollution on the other hand. An extensive inspection program will be set up.

1.2 Fighting noise pollution

Section all vehicles

Action xx Less noise by vehicles
Explanation A program to cut noise by the engines of vehicles, based on the experience of the USA and the EU, will be developed and introduced.

Action xx Less noise by roads
Explanation It is not only the engines that are producing noise. It is also the kind of tarmac on the roads. A program will be developed to decrease the level of noise by the roads.

Action xx Less noise by tires
Explanation Also the tires of the car produce noise. A program will be developed to decrease the level of noise by tires.

1.3 Fighting pollution by waste and garbage

Section garbage collection

Action xx The lack of a efficient system to dispose of garbage and collect it causes pollution of the street and the rivers and the klongs. A more efficient system of garbage disposal and collection will be introduced in Rattanakosin with an emphasis on markets and commercial, tourist and entertainment buildings.

1.4 Fighting pollution of the environment

Section law enforcement

Acion xx	Better law enforcement of environmental and physical planning laws and regulations
Explanantion	The enforcement of the different environmental and physical planning laws and regulations is not strict enough which causes all kind of problems in Rattanakosin in the field of air, soil, water and noise pollution. The regulations on building and extending houses, offices, shops, commercial and entertainment buildings do not permit to extend or remodel these without permission, but lack of enforcement of these regulations leads to all kind of structures which cause problems for traffic and parking and spoil the scenery, A more strict program of law enforcement on these topics will be introduced.

2. Improving natural values

The tremendous growth of the city of Bangkok in the last 25 years has been reached at the costs of a lot of natural values. Parcs, trees, plants, flowers have been sacrificed in favour of the unconditioned and uncontrolled growth of traffic and transport. Now, we are facing the fact that the city is dominated by buildings, roads, bridges, expressways etc. What we see is concrete and stones. There are hardly areas where the citizens can enjoy the wealth of natural values. We do need to get them back in the city. In Kuala Lumpur for instance, the forest has been brought back into the large city. In the outskirts and residential areas of KL one can see monkeys and rare birds. Parks like Hydepark in London, or Central Park in New York do not exist in Bangkok. However, we need them urgently.

2.1 Greening the area

Section urban forestry

Action xx	The forest back into the big city
Explanation	A plan will be developed to get the forest back into the big city, for which Kuala Lumpur might be a good example. The plan covers the recapture of wildlife into the city.

Section city parks

Action xx	More parks in the big city
Explananion	Parks are the lungs of the city. No lungs, no breath, no life. We shall develop an all-encompassing plan for establishing large and small parks over the whole city.
Action xx	Special measures for Rattanakosin
Explanation	A program will be set up to establish beautiful parcs in the Rattanakosin district. Rattanakosin will be a scenery of parcs, plants, trees, and flowers.

Section residential trees and plants

Action xx	More trees and plants in the big city
Explanation	Forest and parks are not enough to provide the citizens with a better standard of living conditions. A program will be set up to enable individual, and organised groups of, citizens to plant trees and plants in their neighbourhood.

2.2 Infrastructural measures

Section infrastructure

Action xx Cutting down on the labyrinth of roads

Explanation The unconditioned and uncontrolled growth of traffic and transport has led to a labyrinth of roads in Bangkok. This is splitting up the city in too many incoherent parts. Establishing a road means on the one hand an instrument to get from one place to another, but on the other hand it often blocks former existing connexions which prevents people to go to areas where they used to go. In the long run the large amount of roads is dividing the city into too many separate parts, hindering people, flora and fauna to get across the streets. A program will be set up to cut down on the labyrinth of roads.

3. Improving safety

The predominant feature of Bangkok in general and of Rattanakosing in particular is the incredible amount of traffic and transport, day and night. It causes a lot of casualties. Yearly too many people die by traffic accidents. We must reduce that number considerably.

3.1 Behaviour

Section behaviour of drivers

Action xx Improving driving behaviour

Explanation Bangkok drivers are known for their reckless way of driving. That must change. A program will be set up to attack this problem with all the power the government has.

Section general awareness

Action xx More awareness

Explanation In general the public has a low standard of the cause and effects of reckless behaviour in traffic and transport. So, a program will be developed to increase the public awareness on safety matters and the obedience of traffic rules.

Section tourism

Action xx Less cheating of and stealing from tourists

Explanation Tourist are often cheated by street vendors while buying souvenirs outside tourist spots. A program will be set up to enforce criminal laws and to avoid this bad behaviour of street vendor threatening the attraction of tourist areas in Rattanakosin.

3.2 Infrastructural measures

Section safer infrastructure

Action xx More and better roundabouts

Explanation Road safety can be improved considerably by the construction of more roundabouts, designed in such a way that it produces a smoother flow of the traffic, reducing thus the number of traffic jams. Well designed roundabouts prevent the necessity of a large number of traffic lights.

Action xx Separate lanes
Explanation Cars, tutuks, buses, lorries, bikes, all in the same lanes cause more accidents than necessary. Infrastructural measures, separating the flow of specific target groups, e.g. people on bikes, will reduce the number of casualties.

Action xx Elevated walking routes
Explanation On many places in Bangkok it is very difficult to cross the street without risking your life. A plan will be developed to establish elevated walking routes as is the case in Hong Kong: in certain areas people can walk for miles on constructed paths 3-5 meter above the ground, alongside and even right through buildings and shops. Many of them are covered and airconditioned. Walking routes like these reduce also the number of people who cross streets where this is not allowed: reducing jay-walking.

Section dangerous goods

Action xx Safer transport of dangerous goods
Explanation In a big city like Bangkok a lot of dangerous, explosive and toxic goods are transported. A plan will be developed to improve the safety of the transport of dangerous goods. This plan contains a.o. measures with respect to special routes for transport of dangerous goods.

Action xx Drivers education
Explanation A program will be established for educating and training drivers of transport of dangerous goods in order to increase their awareness and their capacity in handling this kind of activities.

CHAPTER 3

FUNDAMENTAL ISSUES

Hardly anything of this strategic plan can be implemented in concrete actions without a clear view on fundamental measures to be taken. Measures in the field of law, public participation and funding. Without laws, and strict law enforcement, the strategic plan lacks a legal basis for implementation. Without sincere public participation a lot of measures cannot be fulfilled. We need the involvement and commitment of individuals, organised groups, NGO's, and the private sector. And without money everything stops. So, to get the necessary funds – nationally and internationally - will be at the top of our political attention. All this should be accomplished within the framework of our age-old Thai culture. It is this culture that forms the solid basis for improving our living conditions in Bangkok.

1. Culture

Action xx	Conservation of cultural heritage
Explanation	The preservation of our cultural heritage is therefore of the utmost importance. If we ignore the wealth of our cultural past we shall be embarking on a road to nowhere. Therefore, a program will be set up to conserve the cultural heritage within the context of our traffic and transport system. This includes a program for restoring the old decorations of houses.
Action xx	Public morals
Explanation	A program will be developed to give the schools the responsibility for reintroducing a proper sense of decorum, public spirit and public morals.
Action xx	Buses out of Rattanakosin
Explanation	At present Rattanakosin suffers from tourist buses. There will be a program to leave those buses outside Rattanakosin, providing the tourists with modern, environmentally friendly means of (public) transportation.
Action xx	Co-operation between government and tourist agencies
Explanation	Many tourist companies operate in Rattanakosin. A better co-operation between them and the government will create possibilities to regulate the vast amount of tourist transportation in this area. A program for this purpose will be developed.
Action xx	Training of travel guides
Explanation	A program of training and certifying travel guides operating in Rattanakosin will be set up, to make it possible to regulate the vast amount of tourist in this area better
Action xx	Tourist information
Explanation	A program will be developed to inform tourists about the best possible ways to visit our cultural heritage by means of public transportation.

2. Law

Action xx Development of laws

Explanation As far as present laws do not cover the plans and measures as foreseen in the sections of this chapter new laws will be developed in the areas of environment, nature and safety.

Action xx Law enforcement

Explanation To uphold the new laws police officers will get specific training and education, and the means to get the job done.

Action xx Traffic court

Explanation A special court for handling traffic offenses will be installed.

3. Public participation

Action xx People's panel

Explanation To convey the overall development of programs and plans of this strategic plan, and to monitor their implementation, a People's Panel of about 500 persons will be established.

Action xx Special people's panels

Explanation To convey the development of specific parts of this strategic plan and to monitor their implementation, special People's Panels – of about 25 persons - will be established.

4. Funding

Action xx Public-private-partnership

Explanation Without the (financial) input of the private sector some parts of the strategic plan cannot be implemented. Covenants will be established with the private sector.

Action xx International funds

Explanation International organisations like the World Bank, the UNDB, the European Union, the Asian Development Bank etc. have funds for parts of this strategic plan. These organisations will be invited to participate in the implementation of the strategic plan.

5. Administrative cooperation

Action xx Combining forces

Explanation Many government departments (between BMA and other governmental units) are not working cooperatively together. A program will be developed to enhance the cooperation and coordination between those departments in implementing this strategic plan.