

# INTRODUCTION TO TRANSPORT PLANNING

MASTER PROGRAMME IN TRANSPORT SYSTEM AND ENGINEERING

**MUHAMMAD ZUDHY IRAWAN**

[zudhyirawan.staff.ugm.ac.id](mailto:zudhyirawan.staff.ugm.ac.id)

## TRANSPORT & TRANSPORT PLANNING

- **EFFICIENCY** – To achieve efficient management and better management of existing resources
  1. Effective use of transportation system
  2. Uses of technology
  3. Land use and resource controlling
- **QUALITY** – to reduce a negative impact to the traffic that produce a pollution
- **EQUITY** – to meet travel demand and response for all communities

## THE IMPORTANT OF TRANSPORT PLANNING

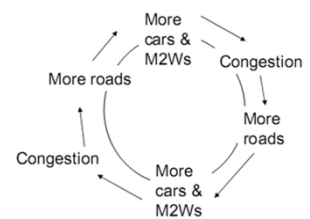
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### Example: The Netherlands

- 1960's
  - Rapid growth of car use car
  - 1965: 600 km. highways.  
Plan: 5300 km. in 2000, 2008: 2200 km
  - Focus:
    - more space for the car in and outside cities
    - no policies for cycling and walking
- 1970's
  - Congestion and pollution
  - Economic loss in cities
  - High fatality rates (3200 in 1972, 800 in 2007)



YANG TERJADI ....  
MIMPI BURUK



## European cities have changed and reversed policies

- **The Netherlands from mid 1980's**
- **Local Policies :**
  - Streets and pedestrian areas in city-centres
  - Access to the city-centre by car is restricted.
  - Cycle networks in all cities
  - etc.
- **Result in the cities:**
  - The use of the car in cities diminished
  - Cycle use increased
    - (currently 26% of all journeys nationwide, > 30% in many cities)
  - The quality of life improved a lot

## TRANSPORTATION PLANNING PERIOD

### 1. SHORT TERM / ACTION PLAN (< 5 YEARS)

- Review matter that can be completed within three years and involve high cost
- Example: program an engineers to optimize the use of existing transportation system by installing various traffic control devices such as signs and signals

### 2. MEDIUM TERM (5 – 10 YEARS)

- Some programs that has significant impact in solving transport problems but no need to be prioritized or it has not been prepared yet if will be implemented immediately

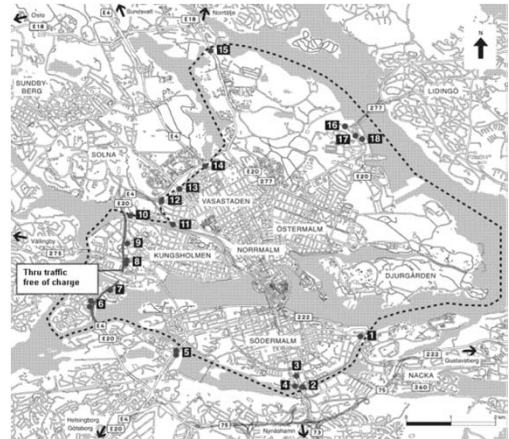
## TRANSPORTATION PLANNING PERIOD

### 3. LONG TERM (> 10 YEARS)

- This type of planning is more structured and complicated and it must be designed better than short and medium term planning
- Urban transport planning process involves planning the next 15 years

## Stockholm Road Pricing

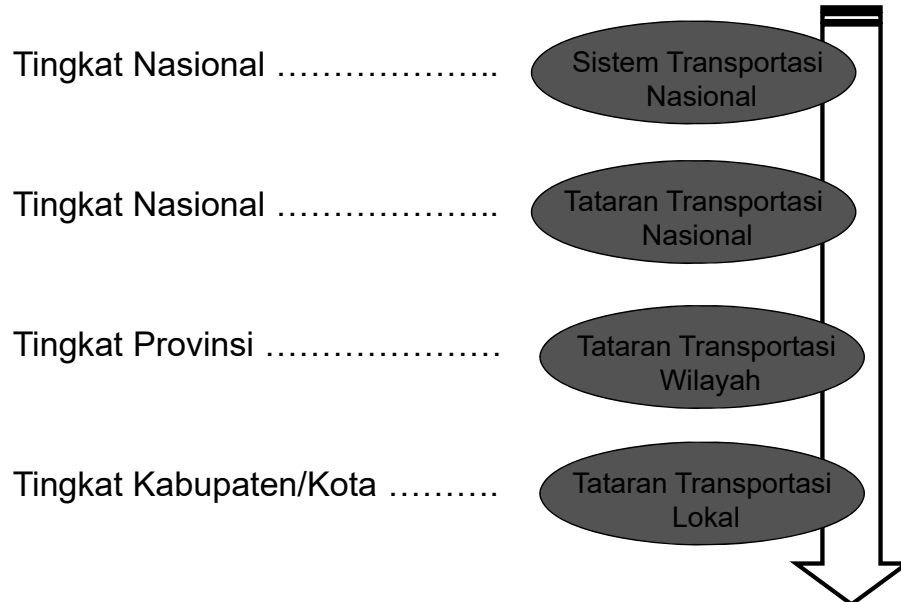
- Masa percobaan: 7 bulan
- Lokasi di area pusat kota 18 titik
- 10-20 SEK setiap melintas (\$1.44 - \$2.88)
- Didukung dengan 16 rute bus baru dan 2800 lokasi park and ride baru
- Tujuan = 10-15% pengurangan lalu lintas
- Hasil = 19% pengurangan lalu lintas
- Memindah pengguna kendaraan pribadi sebesar 4%



## CHARACTERISTICS OF TRANSPORTATION PLANNING

- Determine the transportation needs
- Make/built a transportation formulas
- Study the profitability
- Traffic/travel pattern is clear, stable and can be controlled
- Relationship between the various modes of transport
- The transportation system can influence the development for that area and ready to serve it

## PERENCANAAN TRANSPORTASI DI INDONESIA



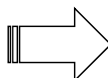
## TRANSPORTATION PLANNING ELEMETS

### PLANNING PROCESS

- **Research stage** : research and analysis that shows the current demand and the relationship of movement with the environmental demands
- **Forecast stage** : formulating the plan, predict future travel demand and make the recommendation to fulfill travel demand
- **Evaluation stage** : to assess whether the proposals made satisfactory demand and provide maximum benefit to the community



MONITORING AND REVIEW



IMPLEMENTATION

## PLANNING PROCESS

- Situation definition
- Problem definition
- Search for solution
- Analysis of performance
- Evaluation of alternative
- Choice of project
- Specification and construction

## TRAVEL DEMAND MODEL

### 1. TRIP GENERATION

- The process of determining the number of trips that will begin and end in each traffic analysis zone within a study area
- To develop the relationship between trip and production or attraction and land use
- To use the relationship to estimate the number of trips generated at some future date under a new set of land use condition

## TRAVEL DEMAND MODEL

### 2. TRIP DISTRIBUTION

- The process by which the trip generated in one zone are allocated to another zones in the study area
- These trips may within the study area (internal – internal) or between the study area and area outside the study area (internal – external)
- To get a travel/traffic pattern (in/out) in a zone

## TRAVEL DEMAND MODEL

### 3. MODAL SPLIT

- The aspect of the demand analysis process that determines the number (or percentages) of trips between zones
- Depends on the factors such as the traveler's income and the availability of transit service
- Limited to public and private vehicles only



## TRAVEL DEMAND MODEL

### 4. TRIP ASSIGNMENT

- The final step in the forecasting process
- To determine the actual street and highway routes that will be used and the number of vehicles that can be expected on each highway segment
- To give a traffic direction to which road in transport network

## PURPOSE OF TRAVEL DEMAND MODEL

- The process is important to be in transportation planning for:
  1. Provide new transportation system
  2. Improve the existing system
  3. Build highway, transit system and other
- To determine the number of trips that will use the existing transportation system. Trip taken in the form of vehicle / non transport and private vehicles and public transport
- Example: Video of Ngurah Rai Roundabout

## TRANSPORTATION STUDIES IN PLANNING PROCESS

- Origin and destination study
- Traffic volume study
- Spot speed study
- Travel time and delay study
- Parking study

## ORIGIN AND DESTINATION STUDY

- To show the pattern and nature of daily trips made by the residents
- The main purpose of OD study is to plan the transport in urban city especially the type of land use, road/traffic network and public transport system
- Application of OD study:
  1. Determine the traffic flow – if traffic congestion occurs, a short cut must be plan to give a comfortable travel to road user
  2. Determine whether the existing road system is adequate or not
  3. Determine the suitable/best position od a bridge or new transport terminal to be constructed
  4. Built a transport models to make sure the transport planning will be more easier and also make a prediction about the traffic pattern in the future

## TRAFFIC VOLUME STUDY

- To collect data on the number of vehicles / pedestrian that pass a point during a specified time period
- To know whether the existing road can accommodate the vehicles that using a road
- Ensure the smooth movement of vehicles and traffic safety
- Application of traffic volume data:
  1. Design for road rehabilitation
  2. Study the traffic at intersection
  3. Study the traffic control system
  4. Forecast/predict traffic volumes
  5. Study of traffic accidents

## SPOT SPEED STUDY

- Conducted to estimate the distribution of speeds of vehicles in a stream o traffic at particular location
- Carried out by recording the speed of a sample of vehicles at specific location
- Will be valid only for the traffic and environmental conditions that exist at the time of study
- Application of spot speed data:
  1. Establish parameter for traffic operation such as speed zones, speed limits
  2. Evaluate the effectiveness of traffic control devices such as variable message sign at work zone
  3. Evaluate/determine the adequacy of highway geometric characteristic
  4. Evaluate the effect of speed on highway
  5. Determine speed trends

## TRAVEL TIME AND DELAY STUDY

- Determine the amount of time required to travel from one point to another on a given route
- Information may also collected on the location, duration, and causes of delay
- Data also aid the traffic engineer in identifying problems at the location
- Application of time and delay data:
  1. Determine the efficiency of a route with respect to its ability to carry traffic
  2. Identification of locations with relatively high delay and the causes for those delay
  3. Determine the traffic times on specifics link for use in trip assignment model
  4. To evaluate the change in efficiency and level of service with time

## PARKING STUDY

- The need of parking spaces is usually very great in the areas where land uses including business, residential, and commercial activities
- Providing adequate parking space to meet the demand for parking
- Application of parking data:
  1. To know whether it is adequate parking or not
  2. To provide information needed to enable the implementation of payment by the parties involved

## THE ROLE OF TRANSPORT POLICY

High quality transport impacts on the pattern of living including

- Affect/improve the productivity and economic growth
- Provide increased accessibility and influence and prices and land use
- Affect the standard of living
- Affect the environment in the city

THANK YOU