Non-Motorized Transport
Questions

- How do you judge the characteristics of your city’s infrastructure for pedestrians?
- How do you judge the potential/role of cycling for your city?

0 = no potential     to     5 = much potential
Non-Motorized Transport

- Walking
- Bicycles
- Tricycles
- Pedi-cabs/rikshaw

Image source: Carlosfelipe Pardo (Copenhagen, Denmark)
What are the strengths and weaknesses of Cycling?

**Strengths:**
- Individual
- Fast and reliable
- Flexible in routing and independant in timing
- Easy to use for everyone
- Low cost in operation & repair
- Healthy
- Income generating
- Users of NMVs generate no noise, air Pollution or green house gases

**Weaknesses:**
- Limited radius of action
- Limited loading capacity
- Difficult to use for elder people and the disabled
- Vulnerable in dense urban traffic
- Absence of variety of bikes
- Low social status/image
- Expensive for low income earners
Non-motorised transport (NMT) is often regarded as an outdated mode of transport.

Although it has a high modal share especially among the poor.

Facilities are generally of low quality.
Dutch Minister visiting the Queen
Why Non-Motorized Transport?

- 1. Low Cost Infrastructure
- 2. Higher User Safety
- 3. Environment friendly
- 4. Low Cost for users
- 5. Healthy for users
- 6. Low-Cost Vehicles
- 7. Better access for all
We enjoy walking and being with people. Our city design should facilitate this.

Bogota’s 17km pedestrian zone
Who are the pedestrians?

Why plan for them?

What is needed and offered?

How do they react if they have what they want?
Anyone using a road is a pedestrian

- Walkers
- Joggers
- Cyclists
- Transit Users
- Car users (yes they also need to walk)
Equity

“The highest priority should go to public transport, walking and non-motorised vehicles that are accessible to almost everyone and have low impacts”

*Enrique Peñalosa*
For cars

For people
SPACE

S = Safety
I bet I can cross the road alive

“S = Safety”
SPACE

P = Priority

From Michael King study developed with SUTP January 2004
Question: Where is the footpath? and Whose footpath is it?
Senior citizens are often deterred from walking
SPACE
A = Accessible
Which do you prefer to cross?

A = Accessible
SPACE

C = Comfort
Pedestrian overpasses uncomfortable and people seldom use them.
SPACE
E = Enjoyable
Do you think anyone would enjoy walking on this “footpath”
SPACE

E = Enjoyable
What if they have what they want?

- Give them S.P.A.C.E and how will they be?
Examples of NMT around the world

(best practices and problems)
Examples of other places in the world

Narrow, obstructed walkway in Hyderabad forces pedestrians onto the street, consuming a full lane of road space.

Walter Hook, ITDP
Nyhaven 1950
Nyhavn today
Developed-city examples

Copenhagen

Munich

Tokyo

Singapore

Stockholm

London
Developed-city examples

Trendline of bicycle share in urban traffic in Europe 1920–2000

Source Interface for Cycling Expertise, Cycling Handbook 2001
Developed-city examples

Bicycle in Europe: History and recent renaissance

Europe
1951
Developed-city examples

Bicycle in Europe: History and recent renaissance

Europe

1990
Developed-city examples

Bicycle in Europe: History and recent renaissance

Europe 2014
Developed-city examples

An advanced stop line for cyclists makes them more visible and provides them with right of way (Utrecht, The Netherlands) Roelof Wittink, I-ce

Separate bus and bicycle lanes through an intersection in Utrecht, The Netherlands. Roelof Wittink, I-ce
Developing-city examples

Shanghai

Bogotá

Curitiba

Buenos Aires
Bike and pedestrian only facilities are great for newly developing areas.

Outskirts of Bogota
Lighting is key
Tools to plan and improve
Pedestrian LOS

From US Highway Capacity Manual
Pedestrian Tracking Surveys I / II

Left:
One sheet of a tracking survey, New York
Project for Public Spaces

Composite tracking survey – note there are 19 survey points, New York
Michael King

Left:
Tracking survey used as an intersection redesign tool, Mulry Square, New York, USA
Project for Public Spaces
Th. Khao San, Bangkok

Th. Chakkabongse

Th. Tanao
KEDUNGDORO PEDESTRIAN FACILITIES

- **Usable Sidewalk**
- **Partially Usable Sidewalk**
- **Unusable Sidewalk**
- **Overpass**
- **Invisible Zebra Cross**
- **Visible Zebra Cross**
- **Clear Zebra Cross**
- **Working Light**
- **Broken Light**

Surabaya
The “do not’s” for pedestrian planning

- Do not put obstacles
- Do not plan with detours
- Do not plan overpasses (except in very exceptional cases)
- Do not give priority to automobiles
5 requirements for cycling planning

1. Road safety
   (speed, visibility, previsibility)
2. Direct routes / speed
   (horizontal design, traffic lights)
3. Coherence
4. Comfort
   (vertical design, traffic lights)
5. Attractiveness (less important)
1. Road Safety

Deaths by road user category

(Selected countries, Global Status Report on Road Safety, WHO, 2009)
1. Road Safety

Reduce the speed

A cycling infrastructure that guarantees road security of the cyclists and other road users
2. Direct Routes/ speed

An infrastructure that offers the cyclist direct routes, without detours and without delay

**Objetives:**

- *Reduce the time of the trip*
- *Reduce the effort*

**We require:**

- Reducing detours
- Bidirectional Traffic for cyclists in all forms
- Reduce delays
3. Coherence

The infrastructure forms a coherent unit and is linked to the origins and the destinations of cyclists

That’s why we need:

- A consistent quality
  → Different design
- Continuity
  → Few changes in the design and width
- Complete routes
  → No interruptions
- Adequate signaling
4. Comfort

How to achieve this?

- Few stops for the bicycle through the traffic lights that benefit the cyclists
- Slippery floor
- Cycleways and long cyclelanes
- Protected form wind, sun and rain
- Without having to get off the bike
5. Attractiveness

The infrastructure is designed and integrated with the environment so that pedalling and walking becomes attractive.

How to achieve this:

- Cycleways pass through attractive and varied environments
- Cycleways coincide the less possible with arterial roads of motorized transit
- Cycleways pass through secure areas (criminality) and illumination
Planning and design of infrastructure has to be done in 4 levels

- Networks
- Sections
- crossings
- road surface
ONE WAY bikeway

2.00 m. minimum width for low volumes (<150 cyclists/h in peak hour)

0.50 m

0.75 m 0.75 m

> 0.25 m.

> 1.00 m

0.50 m

0.50 m
The use of the road

- Number of vehicles
- Kind of vehicles
- Kind of other users (pedestrians, etc.)
- Speed of the vehicles
- Distance between vehicle
- Behavior of the users
- Reason and extension of the trip
Types of cycling infrastructure

- Cycleway
  - Physical segregation
- Cyclelane
  - Visual separation
- Shared traffic
  - Without separation

Greater separation
Greater vehicular speed
Greater vehicular volume
Redistribution on the road

It was the lane of the road

Counterflow

England
Redistribution on the road

Was lane of the road

Counterflow
Brazil
Redistribution in the road

It's part of the road

Santiago de Chile
The importance of details
The importance of details (2)
The importance of details (3)
Clever solutions: Handrails
Clever solutions: Roadspace reallocation
Clever solutions: Bikes can go both ways...
Stop lights! (6 seconds before cars)
Parking properly
... but learning how
And how to design it…
Bicycle model
Bicycle model
E-Mobility ???
Do we have answered our questions?

- How do you judge the characteristics of your city’s infrastructure for pedestrians?
- What space do pedestrians need on roads?
- What space do bicycle users need on roads?
VIDEO

Cycling friendly cities
Thank you!

GIZ SUTP project
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