DEVELOPMENT OF COURSEWARE ON NMT SITUATIONAL ANALYSIS
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FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION
STRUCTURE OF PRESENTATION

- Rationale
- The assignment
- The process
- Training needs assessment
- Conceptual framework of the courseware
- End terms and learning objectives
- Session descriptions
African cities are growing at an unprecedented rate. This growth provides for economic opportunities for many residents, but at the same time causes undesired externalities: urban sprawl, congestion, pollution. Transport in many of these cities is characterised: poor roads, low quality and unreliable public transport, fast growth in vehicle ownership and use, sub-standard or absent facilities for cyclists and pedestrians. The latter is remarkable, as the majority of Africans travels on foot or, to a lesser extent, by bicycle.
In most African countries transport infrastructure planning takes place to accommodate primarily for motorised vehicles.

Not a lot is being done currently in terms of providing proper infrastructure or addressing road safety issues for walking and cycling in cities in Africa.

This is of particular concern for the urban poor who are affected far more than others by the negative effects of urbanisation:

- Spatial exclusion:
  - slum locations and at the periphery of cities

- Social exclusion:
  - time and cost for them to access jobs, education and other services, while most travel takes place in discomfort and unsafe conditions.
Sustainable transport is more than mobility alone: *The 5 A’s*…

- **Affordability** – Whether transport options have financial costs within the targeted users’ budget.
- **Availability** – Whether transport options exist at the location and time users require.
- **Access** – Whether transport options accommodate users’ abilities, including people with disabilities and special needs, taking into account the total journey (i.e., door-to-door), i.e. integration of modes and sustainable safe options.
- **Accessibility** – Whether transport options available provide access to destinations people need/want to go to
- **Acceptability** – Whether transport options are considered suitable to users
Addressing NMT issues in the context of African cities requires adopting a multi-disciplinary approach, involving:

- Engineers
- Urban and regional planners
- Environmental experts
- Social geographers and related disciplines to be involved

And equip them with knowledge on the latest theories, methods and tools that allow for NMT inclusive urban planning that is:

- inclusive (caters for all, particularly for the urban poor)
- integrative (provides for a transport system that is a smart mix of public transport, cycling, walking and private modes)
- efficient (in its technical and spatial design).
THE ASSIGNMENT

- Help establish a critical mass of multi-disciplinary professionals (from engineering, planning, social sciences, economy, geography, etc) that are able to apply innovative and effective approaches to understand and address NMT issues in the context of fast changing cities in Africa.

- Develop courseware for a short-course on NMT Situational Analysis (i.e. walking, cycling and related topics).

- Which can be used by partners in the Share the Roads program, particularly their focal points in Kenya, Uganda, Rwanda and Burundi for training transport professionals.
FIRST IDEAS

- A training course that is modular and allows for a tailor-made 1 to 1.5 days training

- Courseware which is accessible and understandable to all key players (policy developers, planners, engineers, analysts, scientists) in transport and its various related disciplines in the partner countries, both from the national and local government, NGO’s, universities and the private sector.

- Training of Trainers (ToT): not yet included.
THE PROCESS

- Three telephone conferences with UNEP
- Discussions with Dutch Cycling Embassy staff
- Two internal workshops in University of Twente
- Drafting of lecture materials
- Today’s workshop for refinement and discussion on rationale and preliminary outputs
- Finishing and reporting on materials (after this meeting)
- Making the materials accessible to Share the Road program and partners (after this meeting)

- Project volume: about 2 weeks of staff time.
THE NEED FOR CAPACITY

Training Needs Assessment:

- To be able to plan and develop NMT policy and infrastructure, stakeholders need to be able to analyse and understand the role of NMT in urban mobility and recognize this requires multi-disciplinary and innovative approaches.

- More understanding of NMT related methods, techniques and approaches of policy, planning and analysis are needed.

- To conduct a NMT situational analysis stakeholders need to be equipped with a perspective on equity, environment, gender and sustainability.
Key issues to be addressed in successful NMT situational analysis and assessment

By definition this is a multi-disciplinary undertaking! Not for engineers only!
THE CURRICULUM CONCEPT

- Multi-disciplinary in nature
- Modular set-up
  - General sessions
  - Technical sessions
- 1.5 to 2 days of training, exclusive of excursions, exercises and/or homework
After completing the training, participants should be able to:

1. **Integrate** multi-disciplinary knowledge and techniques on policy, planning and design for NMT and use this for effective task execution and practical problem solving in the field of urban transport.

2. **Understand the benefits and co-benefits** of NMT inclusive urban planning.

4. Understand and evaluate the **impacts and effects** of NMT interventions on beneficiaries (communities) and have the capacity to **prioritise** these.

5. Understand the **technical foundations** of NMT situational analysis and its application in the African context.
KEY LEARNING OBJECTIVES OF THE COURSE

- **Describe** key concepts of sustainable transport in general and NMT in particular.
- **Distinguish** the potential of NMT in contributing to alleviating social exclusion, mitigating transport emissions and enhancing accessibility.
- **Explain**, from a transport system perspective, what are the relative strengths of NMT and discuss the benefits of its development and integration with public transport.
- **Discuss** the key principles of cycling and pedestrian network planning and facility design.
- **Illustrate** the role of infrastructure design in improving safety for pedestrians and cyclists.
- **Illustrate** the role of education, awareness building, social marketing in promoting NMT.
- **Apply** CBA and behavioural analysis techniques to NMT-inclusive planning.
- **Apply** selected survey methods and techniques for NMT-situational analysis.

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1. Principles of sustainable urban transport in the context of African cities
2. From mobility to accessibility (including, access to health)
3. Transport-related social exclusion (including, issues of gender)
4. The role of NMT in climate change mitigation (including, discussion of co-benefits)
5. Intervening in the transport system to promote accessibility, inclusion and mitigation
6. Bicycle planning and design
7. Pedestrian planning and design
8. Integration of NMT with public transport
9. Best-practices in infrastructure design for sustainable safety
10. Education, awareness building, social marketing and advocacy for NMT

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COURSE CONTENT – TECHNICAL SESSIONS

1. Measuring behavior and choices
2. Evaluating NMT planning interventions (recap CBA methods)
3. Survey methods and techniques for NMT
Lecture objectives:

- Describe key concepts of sustainable urban transport
- Understand key principles of sustainable urban transport in general and NMT in particular
- Translate and apply the key concepts and principles of sustainable urban transport in the context of African cities
SESSION 2A: FROM MOBILITY TO ACCESSIBILITY (INCLUDING, ACCESS TO HEALTH)

Objectives:

- Define mobility and accessibility
- Discuss the differences between mobility and accessibility
- Conceptualize accessibility and discuss its relation with urban design
- List the key factors in an accessibility-based analysis
- Link accessibility with concepts of transport adequacy and sustainable urban development
- Translate the concept of accessibility into a concrete set of measures
- Apply accessibility metrics to study social exclusion in a case study
SESSION 2B: ACCESS TO HEALTH

Objectives:

1. Explain what social services are and describe the main principles that are used to guide their provision.

2. Give examples of different types of social services and clarify why a proper geographic distribution is important.

3. Characterize the main components of the accessibility concept.

4. Comprehend the added value of GIS as a spatial planning tool for health care.

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SESSION 3: TRANSPORT-RELATED SOCIAL EXCLUSION (INCLUDING, ISSUES OF GENDER)

Objectives

- to understand the concept of transport related social exclusion
- to understand and discuss gender related issues in transport related social exclusion
- to discuss recommendations on women and girls transport inclusion
- to illustrate some indicators including gender and transport inclusion
SESSION 4: THE ROLE OF NMT IN CLIMATE CHANGE MITIGATION (INCLUDING, DISCUSSION OF CO-BENEFITS)

- Discuss the contribution of transport to climate change mitigation
- Distinguish mitigation and adaptation strategies
- Apply ASIF method to calculate and analyse transport emissions
- Discuss ASI framework to intervene in the transport system
- Define the benefits and co-benefits of climate change mitigation measures
- Discuss the role of NMT in climate change mitigation
- Apply the Climate Value of Cycling method

*For a comprehensive list of co-benefits in the transport sector, please see Table 2.1

Figure 2.1 Flowchart of co-benefits from the ASIF framework
Source: adapted from Schipper et al. (2000)
SESSION 5: INTERVENING IN THE TRANSPORT SYSTEM TO PROMOTE ACCESSIBILITY, INCLUSION AND MITIGATION

- To discuss various urban planning and transport planning concepts that could promote the use of NMT
- To define and operationalize measures to quantify and qualify the impact on
  - Accessibility
  - Social inclusion
  - Climate change mitigation

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SESSION 6: BICYCLE PLANNING AND DESIGN

- To discuss the five principles of bicycle network design:
  - Safety
  - Coherence
  - Directness
  - Comfort
  - Attractiveness

- To demonstrate basic design rules of bicycle infrastructure
SESSION 7: PEDESTRIAN PLANNING AND DESIGN
SESSION 8: INTEGRATION OF NMT WITH PUBLIC TRANSPORT

- Discuss theoretical concepts of PT-NMT integration
- Describe different concepts of integration at different scales (urban, network, facility level)
- Appreciate the role of Public Bike Systems in contributing to an integrated transport system
- Get an idea of what a GIS based multi-modal model looks like
SESSION 9: BEST-PRACTICES IN INFRASTRUCTURE DESIGN FOR SUSTAINABLE SAFETY

- To discuss the concept of sustainable safe infrastructure:
  - Its principles
  - Best-practices internationally
  - Results

- To discuss methods for advancing sustainable safety in the context of African cities
SESSION 11: MEASURING BEHAVIOR AND CHOICES

- To understand choice behaviour for NMT in the context of African transport better
- To discuss the theory of stages-of-change
- To develop stated preference surveys and derive simple choice models

Diagram:

- Willingness to pay
  - Stated preferences
    - Transfer price method
    - Contingent valuation (CV)
    - Frisch elicitation (FE)
    - Conjoint analysis
  - Revealed preferences
    - Close-ended CV
    - Open-ended CV
    - Choice experiments (CE)
    - Ranking
    - Rating
    - Single-bounded dichotomous choice
    - Double-bounded dichotomous choice
    - Iterative bidding
SESSION 12: EVALUATING NMT PLANNING INTERVENTIONS (RECAP CBA METHODS)

- Identify typical questions in the evaluation of Non Motorized Transport (NMT) projects
- Describe the impacts of various types of non-motorized transportation (NMT) policies and projects in terms of costs and benefits
- Recognize the factors contributing to demand for NMT
- Describe methods to quantify and monetize effects of NMT policies and projects
- Discuss the potential and limitations to use conventional CBA approaches to evaluate NMT policies and projects
SESSION 13: SURVEY METHODS AND TECHNIQUES FOR NMT

- To list and discuss key variables of NMT and their survey methods related to:
  - Travel demand
  - Infrastructure supply
  - Traffic safety
  - General institutional issues

- To list for each type of data:
  - Elements
  - Key variables
  - Dimensions
  - Survey methods
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<thead>
<tr>
<th>Session</th>
<th>Day 1</th>
<th>Day 2</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>• (1-1 <strong>AN/MvM</strong>) Principles of sustainable urban transport in the context of African cities</td>
<td>• (2-1 <strong>MB</strong>) Example/Exercise: designing your own NMT network</td>
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<td>2.</td>
<td>• (1-2 <strong>MZ/SA</strong>) From mobility to accessibility: the sustainable transport paradigm</td>
<td>• (2-2 <strong>MB</strong>) Integration of NMT with public transport</td>
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<td>3.</td>
<td>• (1-3 <strong>SA</strong>) Example: access to health in Dar-es-Salaam</td>
<td>• (2-3 <strong>MvM</strong>) Example: Best-practices in infrastructure design for sustainable safety</td>
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<td>4.</td>
<td>• (1-4 <strong>JM</strong>) Transport-related social exclusion, including gender-issues</td>
<td>• (2-4 <strong>MvM</strong>) Education, awareness building, social marketing and advocacy for NMT technical sessions</td>
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<td>5.</td>
<td>• (1-5 <strong>MZ</strong>) The role of NMT in climate change mitigation (and how this relates to the important co-benefits)</td>
<td>• (2-5 <strong>AN/MZ</strong>) Measuring behaviour and choices</td>
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<td>6.</td>
<td>• (1-6 <strong>MZ/JM</strong>) Intervening in the transport system to promote accessibility, inclusion and mitigation through NMT</td>
<td>• (2-6 <strong>ED</strong>) Evaluating NMT planning options (CBA)</td>
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<td>7.</td>
<td>• (1-7 <strong>MB</strong>) Bicycle planning and design</td>
<td>• (2-7a <strong>MZ/MB</strong>) Survey methods and techniques for NMT situational analysis</td>
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<td>8.</td>
<td>• (1-8 <strong>MB</strong>) Pedestrian planning and design</td>
<td>• (2-7b <strong>MZ/MB</strong>) Survey methods and techniques for NMT situational analysis</td>
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FURTHER WORK

- Training of Trainers
- Integration and collaboration with other (training) initiatives
  - TEST, Share the Road
- Investigate potential for e-learning
- Advanced training options
CONCLUSIONS AND RECOMMENDATIONS