SECTION 2 – SUGGESTIONS FOR COURSE OUTLINE & ACTIVITIES

4. SUGGESTED SYLLABUS OUTLINE

The following syllabus-outline incorporates the main themes and sub-themes on climate change and African cities. This framework can be used to structure a stand-alone module or be integrated into existing modules in a planning education programme.

The syllabus has been divided into six sub-themes starting with a general introduction in climate change science, projections and impact. This is followed by sections on how the impacts from climate change will exacerbate already existing development challenged in African cities; perspectives on addressing the impacts of climate change; and lastly planners' and planning's specific roles in addressing climate change. The rationale for each sub-theme is explained in more detail under each sub-theme in the next section.

Sub-theme 1: Introduction

(a) Significance of this module: why a course in planning for climate change?
(b) Concepts and terminology

Sub-theme 2: Climate change science, scenarios and impacts

(a) Climate change science
(b) Projected climatic changes for Africa
(c) Climate change impacts

Sub-theme 3: Vulnerability of African cities to climate change impacts

(a) Urbanisation and management
(b) Urban risk and vulnerability

Sub-theme 4: Perspectives on planning for climate change

(a) Adaptation and mitigation
(b) Disaster risk reduction
(c) Sustainable development planning

Sub-theme 5: Urban planning and climate change: challenges and opportunities

(a) Planning in the face of uncertainty
(b) Reducing the risk from climate change impacts
(c) Stakeholders in planning for climate change
(d) Awareness and capacity building

Sub-theme 6: Conclusion

5. SUGGESTED SESSION PLANS AND ACTIVITIES

The purpose of this section is to make suggestions for session plans and activities. This section therefore:

- Makes suggestions on how each sub-theme can be incorporated into an educational planning course;
- Provides more information about what students should be expected to take out of a seminar/lecture/project dealing with each particular session (sub-theme) by:
  - Describing the thematic content of the session
- Suggests how each sessions should be planned by:
  - Suggesting which case studies could be used within session activities
  - Proposing activities that are designed to aid in the teaching and learning of the particular sub-theme
- Suggests a list of sources used and references to other relevant case studies, reports or scholarly articles that will enhance both teaching and learning of each sub-theme.

Important note:

This syllabus was designed with one contact session of three consecutive hours per week, one week apart in mind. It is also assumed that students will work on projects between the contact sessions. If this timeframe is followed, a total number of 12 weeks will be necessary to complete all the sub-themes in the module. If less time for this module is available, the omission of specific sub-themes has been suggested. If less time between sessions is available, then some of the proposed activities need to be shortened, simplified or done in groups to allow students sufficient time to complete the activities.

Sub-theme 1: Introduction

1.1 Incorporating sub-theme 1 into a planning course

Just as planning for the impacts of climate change are most effective when integrated into mainstream planning practices, so is the integration of the sub-themes in this syllabus into the mainstream planning curriculum. In other words, this theme on climate change and African cities could be offered as a stand-alone module, or could just as well be integrated into other modules – for planning for the impacts of climate change is not something separate to what we as planners are already doing, but about thinking differently about how we are planning urban areas in Africa.

Consequently, this introduction can serve as an introduction to a stand-alone module on climate change and African cities, or as the introduction to a sub-theme on climate change and African cities within an existing module on, for example, spatial planning or land-use planning.

1.2 Thematic content of this session

(a) Significance of this module: why a course in planning for climate change?

Many academics, planning practitioners and students still believe that 'planning for the impacts of climate change' is not a call for the planning profession, and thus there is no need to include it in a planning course. This introduction explains the significance of the impacts of climate change for

cities – to convince even the most determined sceptic that climate change adaptation and mitigation ought to be integrated into planning practice sooner rather than later.

Summaries of the following topics can serve as arguments to motivate the significance of this module (each topic will be discussed in more detail in the sub-themes of this module):

- Urbanisation trends in Africa
- The increasing number of climate-related disasters in urban areas, particularly in the developing world
- Increasing vulnerability amongst the poor that threatens sustainability
- Lack of planning for the impacts of climate change in cities in Africa
- Why should planners get involved?

(b) Concepts and terminology

The following concepts might be foreign to students and need to be explained within the urban planning context:

- Global warming and climate change
- Vulnerability and risk
- Climate change adaptation and mitigation
- Resilience and disaster risk reduction

1.3 Planning this session

The first part of the session should be used to convince students that climate change is serious. The statistics, graphs and case studies, indicating that the number of disasters in urban areas is increasing (many of which are climate related), make a compelling case that the impacts of climate change in cities can no longer be ignored.

Concepts and terminology can often be boring subject-matter. To ease students into the course, a simple class activity might be called for.

This sub-theme could be dealt with during one session.

1.3.1 Which case studies to use within session activities

Case study 1 on Lagos, Nigeria is a good example of how vulnerable a city can be when it does not plan for the impacts of climate change. Case study 2 on Delhi, India is a good example of a city that has started to address climate change mitigation, but not adaptation as yet.

1.3.2 Proposed activities

During the introduction, the group can discuss what the statistics, graphs and case studies tell them, and whether this is sufficient reason for planners to get involved in planning for climate change.

The second part of the session can be dealt with during a more structured class activity. The concepts can be divided among the students – either per individual or group, depending on the number of students taking the course. Each has to then develop their own definition/description for

that concept, with an example to illustrate the concept. These definitions and descriptions can then be discussed in class, and the lecturer can provide some guidance on the accuracy and comprehensiveness of the definitions and examples.

1.4 List of sources used, references to case studies, reports, and scholarly articles

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Sub-theme 2: Climate change science, scenarios and impacts

2.1 Incorporating sub-theme 2 into a planning course

This sub-theme on climate change science, scenarios and impacts forms a helpful background to the theme on climate change and African cities. However, part of the sub-theme (see 2.2 (a) Climate change science, and (b) Projected climatic changes for Africa) could be optional if airtime for 'climate change and African cities' within an existing module is a constraint.

Fundamental though, is the understanding of the impacts of climate change on African cities (point (c) under 2.2), for these impacts have consequences for our planning decisions. This topic may also be included under the sub-theme 3 on 'Vulnerability of African cities to climate change'.

2.2 Thematic content of this session

(a) Climate change science

Though the climate science could be quite scientific and technical, it is important for planners to realise how much the local climate has already changed in the course of the past 100 years, in addition to having a basic understanding of the complexities within the climate change science.

Topics that can be included in this sub-section are:

- Climate change basics: the complexities of the interactions and feedback loops between temperature, precipitation, ocean temperature, wind circulation, ice melting, etc.
- Global warming: continent-, region- and country-specific climatic changes during the past 100 years

(b) Projected climatic changes for Africa

A basic appreciation of the different emission scenarios and climate change projections for countries in Africa is very useful to understand the impacts of climate change.

Topics that can be included in this sub-section are:

- Emission scenarios: the politics of global warming
- Continent, region and country-specific emission scenarios
- Climate scenarios: the certainties and uncertainties
- Continent, region and country-specific climate change scenarios

(c) Climate change impacts

Planners need to be well-informed about the projected impacts of climate change, for these may have severe consequences for many African cities, particularly coastal cities.

Topics that can be included in this sub-section are:

- Projected impacts of climate change on African cities: severe weather, sea-level rise, floods, coastal storms, landslides, cyclones, etc.
- Consequences of the impacts of climate change on urban areas in Africa: growth management, informal settlements, infrastructure, ecosystems, health, energy, housing, water and food security, migration, poverty reduction, conflict, etc.

2.3 Planning this session

This sub-theme could be quite technical. If possible, a colleague from the climate sciences should be requested to present most of the sub-theme in easy to understand terms. If not possible, many books explain this in simple terms, e.g. The Rough Guide to Climate Change is a good place to start.

Emphasis should however be on what this means for urban areas. A class activity could be a good way of dealing with this topic, though students should come prepared.

Allow two sessions to deal with this topic – one for the theory on climate change, and one for a workshop session.

2.3.1 Which case studies to use within session activities

Case study number 3: Dhaka, Bangladesh is a good illustration of climatic changes already impacting on one of the biggest mega cities in the world. These impacts and their consequences are increasing in severity, and will continue to do so.

2.3.2 Proposed activities

Before the commencement of the second session on this sub-theme, students should have prepared an essay of approximately 5 000 words on the consequences of climate change for African cities. Cases from cities around the world may be used as examples of these consequences. These essays may be submitted for assessment.

The lecturer could then in the second session engage the students, having prepared for this topic, in a workshop during which the most important consequences are teased out.

2.4 List of sources used, references to case studies, reports, and scholarly articles

- Adger, W., Arnell, N., & Tompkins, E. (2005). Successful adaptation to climate change across scales. *Global Environmental Change , 15*, 77-86.
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- Rumsey, A., & King, N. (2009). Climate change: Impacts, adaptation, and mitigation; threats and opportunities. In H. Strydom, & N. King, *Fuggle & Rabie's Environmental Management in South Africa* (2nd ed.). Cape Town: Juta.
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- UNFCCC. (2007). *Climate Change: Impacts, Vulnerabilities, and Adaptation in Developing Countries.* Bonn: UNFCCC (United Nations Framework Convention on Climate Change).
- World Economic Forum. (2010). *Global Risks 2010.* Global Risk Network. Geneva: World Economic Forum.

Sub-theme 3: Vulnerability of African cities to climate change impacts

3.1 Incorporating sub-theme 3 into a planning course

This sub-theme on the vulnerability of African cities to climate change impacts together with Sub-theme 5 on the challenges and opportunities these hold for urban planning is the crux of the syllabus. Many of the topics covered in this sub-theme may be similar to other modules on, for

example, housing, informality, access to land or urbanisation; but this sub-theme specifically considers urban risk and vulnerability caused and exacerbated by the impacts of climate change.

3.2 Thematic content of this session

(a) Urbanisation and management

Africa is the world's most rapidly urbanising continent. This section explores the developmental challenges characteristic of many African cities, and which could be exacerbated by the impacts of climate change.

Topics that can be included in this sub-section are:

- Urbanisation in Africa: trends, settlement patterns, infrastructure backlogs, informality, poverty, etc.
- Urban management challenges in African cities
- The urban-rural link: agriculture, migration, remittances, etc.
- Threatening sustainable urban development: consequences of climate change exacerbating already exiting development challenges

(b) Urban risk and vulnerability

Because of the numerous developmental challenges discussed under (a), poor households are increasingly exposed to compound hybrid hazards as well as everyday risks. The impacts of climate change add another risk to content with for households that are already vulnerable. This gives rise to mounting hazardousness in African cities, increasing the probability for a disaster to occur.

Topics that can be included in this sub-section are:

- Community and household vulnerability: physical/material, social/organisational, motivational/attitudinal
- Compound hybrid hazards on the rise in African cities: environmental, industrial, social, economic, technological, physical
- Everyday community and household risks in African cities
- Mounting hazardousness due to the impacts from climate change

3.3 Planning this session

This session lends itself very well to a combination of theoretical and practical sessions. It is assumed that most students are familiar with the typical characteristics of African towns and cities, but if not, then sufficient time should be spent on lecturing on the first part of the sub-theme. Emphasis should be on how climate change could exacerbate many development challenges in African cities, for this may be new to many students.

The second part of the sub-theme can be dealt with in a very practical way – by going on a field trip after the most basic theory on risk and vulnerability has been explained.

Allow two sessions to deal with this topic – one for the theory and one for the field trip (sufficient time should be allowed for the field trip).

3.3.1 Which case studies to use within session activities

Case study number 4: Cape Town, South Africa is a good example of urbanisation trends in Africa and its consequences for urban management. It illustrates the everyday risks and increasing hazardousness of African cities in general that increase the vulnerability of African households. It also demonstrates why a contextual risk and vulnerability analysis is crucial.

3.3.2 Proposed activities

The purpose of this activity is to compile a contextual risk and vulnerability assessment report. Students are required to visit a specific village/town/part of a city – either individually, or in a group, depending on the nature of the course or the size of the settlement. The settlement should however be big enough to gather a variety of data.

Before embarking on the fieldtrip, students need to compile a risk and vulnerability assessment sheet by consulting case studies, reports and scholarly articles, as well as local strategies and plans that may make mention of any such factors. The sheet should include qualitative and quantitative environmental, social, economic, physical, technological and industrial risk and vulnerability indicators. Depending on the nature of the course it could be a simple sheet only with indicators, or a more complex sheet with scales linked to each indicator. This sheet could be an individual project or could be consolidated for the group.

During the visit, students should, apart from making observations, consult widely with the formal and informal business community, residents, local authority, NGOs, churches, etc. in completing the risk and vulnerability sheet. The final product should be a risk and vulnerability assessment report on that specific village/town/part of a city.

3.4 List of sources used, references to case studies, reports, and scholarly articles

- Anderson, M., & Woodrow, P. (1998). *Rising from the Ashes: Development Strategies in Times of Disaster.* Boulder: Lynne Rienner Publishers.
- Annan, K. (1999). *Preventing War and Disaster: A Growing Global Challenge.* New York: United Nations Department of Public Information.
- Benhin, J. (2006). Climate change and South African agriculture: impacts and adaptation options. *CEEPA Discussion Paper No. 21.* Pretoria: Centre for Environmental Economics and Policy in Africa, University of Pretoria.
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Sub-theme 4: Perspectives on planning for climate change

4.1 Incorporating sub-theme 4 into a planning course

So far in the syllabus climate change scenarios and the mounting vulnerability of households in African cities due to, amongst others, the impacts of climatic changes have been illustrated. It is

manifest that something needs to be done to respond to the impacts of climate change on our cities. This sub-theme highlights three perspectives on planning for climate change: climate change adaptation and mitigation, disaster risk reduction, and sustainable development planning. All three perspectives are useful in the climate change debate, but each has their benefits and disadvantages. Though this sub-theme offers an excellent theoretical foundation for Sub-theme 5, it may be excluded from the syllabus if time is a constraint.

4.2 Thematic content of this session

(a) Adaptation and mitigation

Climate change adaptation and mitigation is a developing field in urban planning that is becoming very popular. The disadvantage of approaching climate change from this perspective is that it considers climate change in isolation from other risks, and as we know from Sub-theme 3, urban risk is dynamic, complex and hybrid. The advantage of this approach is that it has gained political popularity, and may prove to be the only way forward in planning for climate resilient cities.

Topics that can be included in this sub-section are:

- Adapting cities to the impacts of climate change: building resilience
- Adaptation measures
- Mitigating climate change: reducing the risk
- Mitigation measures
- Both mitigation and adaptation are necessary

(b) Disaster risk reduction

Disaster management has a long history, especially in community involvement, with disaster risk reduction gaining importance. The advantage of this approach is that it is a systematic and integrative approach towards reducing vulnerabilities and building resilience – not only for climate change, but for compound urban hazards.

Topics that can be included in this sub-section are:

- Reducing vulnerabilities and building resilience
- Disaster risk reduction measures
- The link between disaster risk reduction and climate change adaptation and mitigation

(c) Sustainable development planning

Sustainable development (often an elusive concept) that does not specifically address adaptation to climate change, only serves to reduce emissions, and does not necessarily reduce the risk for disaster. Climate change is most effectively addressed when integrated into wider development strategies that in turn addressed every aspect of urban planning.

Topics that can be included in this sub-section are:

- What sustainable urban development is

- Integrating measures to mitigate and adapt to climate change into sustainable development planning

4.3 Planning this session

This sub-theme consists of a combination of normative principles and very practical measures in planning for climate change. A lecture on the theory of all three approaches above can be presented, after which students can do their own case study research to uncover practical climate change adaptation and mitigation measures from cities around the world.

Allow two sessions to deal with this topic. One for the theoretical component, and one for the presentations of the proposed activity.

4.3.1 Which case studies to use within session activities

Students to do their own case study research.

4.3.2 Proposed activities

Students are required to do case study research on three cities that have already developed climate change mitigation and adaptation measures. Each case study should contain a brief background that describes the challenges posed by climatic changes and variability; the urban planning-related measures taken by the city to adapt or mitigate climate change; from which perspective these measures are being motivated; and, if possible, an evaluation of the success of these measures. Adding photos would greatly enhance the presentation.

4.4 List of sources used, references to case studies, reports, and scholarly articles

- Adger, W., Arnell, N., & Tompkins, E. (2005). Successful adaptation to climate change across scales. *Global Environmental Change , 15*, 77-86.
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Sub-theme 5: Urban planning and climate change: challenges and opportunities

5.1 Incorporating sub-theme 5 into a planning course

Together with Sub-theme 3 (vulnerability of African cities to climate change impacts), this sub-theme forms the core of the syllabus. This sub-theme describes the role of the urban planner in the 'fight against climate change' and proposes various interventions in adapting to and mitigating climate change. This sub-section also encourages students to consider the impacts of climate change in their own towns and cities by developing sustainable planning practices and strategies that respond to these challenges.

5.2 Thematic content of this session

It would be accurate to regard many of the interventions proposed in this sub-theme as nothing more than widely-accepted 'sustainable development', 'SMART-growth' or good urban planning practices. The effectiveness of planning for climate change however lies in the approach to sustainable development. Whereas many development plans and strategies propose common sustainability principles such as higher densities – which assist in mitigating climate change – it may be detrimental to climate change adaptation in a specific location. In fact, without having conducted a context-specific risk, vulnerability and climate change impact assessment, such measures may have the opposite effect, and put many people at risk.

Short, medium and long-term action is required. Student should think about immediate action to be taken, and medium- and long-term changes to planning practice as well as strategies to include planning for climate change.

Topics that can be included in this sub-section are:

(a) Planning in the face of uncertainty

- Benefits of planning for climate change despite uncertainties
- The role for urban planners in addressing the impacts of climate change

(b) Reducing the risk from climate change impacts (make links to other urban planning modules)

- Mitigating for climate change: challenges and opportunities
- Adapting to the impacts of climate change: challenges and opportunities
- Land-use planning: location, density, multiple-use, integrating transport planning
- Spatial planning: urban form, relocation
- Urban design
- Transport planning: need to travel, public transportation, integrate land-use planning
- Appropriate built environment standards

(c) Stakeholders in planning for climate change

- National, provincial and local government
- The private sector
- Community participation: identify and monitor hazards, reduce risk and prepare for disasters
- International organisations, NGOs, CBOs, FBOs

(d) Awareness and capacity building

- Raise awareness
- Improve access to information
- Intellectual, technical and financial empowerment
- Social infrastructure and safety nets

(e) Implementation

- Immediate action
- Medium- and long-term urban planning strategies and practices
- Budget implications

5.3 Planning this session

This sub-theme will entail two lecturing sessions during which the emphasis should be on the various ways in which planning can intervene to mitigate and adapt to climate change. These can be very specific in terms of land-use management, transportation planning, urban design, etc. The final session on this sub-theme will be spent on reflection and application by students doing a presentation on the proposed activity.

Allow three to four sessions to deal with this topic – two to three for the theory and one for the presentation of the proposed activity.

5.3.1 Which case studies to use within session activities

Case study number 5: Sorsogon City, Philippines is a good example of a city that has been grappling with a comprehensive climate change action plan since 2008. The city has addressed a number of issues that are dealt with under this theme: measures to reduce the risk from climate change, stakeholder consultation, capacity building, and implementation.

5.3.2 Proposed activities

Students should reflect on everything they have learnt during this module and apply this knowledge to the particular village/town/part of the city which they have visited during the fieldtrip in Sub-theme 3:

- The first part of the activity involves the development of practical climate change adaptation and mitigation measures that address the specific climate change risks and vulnerabilities of that particular settlement. These measures should differentiate between short-, medium- and long-term action.
- Secondly, these measures should be integrated into, or expanded to include wider disaster risk reduction measures, so as to not address climate change in isolation.

- Finally, these measures should be imbedded into an existing urban planning strategy, plan, framework or intervention (here could be links to projects in other modules). The budget and implementation framework should, where applicable, be adjusted accordingly.

5.4 List of sources used, references to case studies, reports, and scholarly articles

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Sub-theme 6: Conclusion

6.1 Incorporating sub-theme 6 into a planning course

This sub-theme concludes on the need and desirability for planners to integrate climate change adaptation and mitigation measures into broader disaster risk reduction strategies, which are again mainstreamed into planning practices.

6.2 Thematic content of this session

Every planning student should be convinced by now that even if climatic changes and their impacts never occur (thought they already are a reality), planning for climate change could reduce the vulnerabilities of poor households not only to major hazards, but also to everyday risk. Planning for climate change therefore reduces the risk for disaster by building resilient communities, and it

contributes to overall sustainable urban development. Planning for climatic changes makes social, economic, environmental and political sense, and is thus at its core a function for planning.

Topics that can be included in this sub-section are:

Conclusion

- Planning for climate change: a core function for planning

6.3 Planning this session

Students will be required to come prepared and present the proposed activity to the class. Afterwards the lecturer and the students should conclude on the importance of planning for climate change as a core function of the planning profession, and how to take it from here.

Allow one session to deal with this topic.

6.3.1 Which case studies to use within session activities

Case study number 6: The UNISDR 'My city is getting ready' Campaign. Though on a different scale, this case study will help students to understand what is expected of them in the proposed activity. If the proposed activity is excluded from the module, then the case study is even more important to sensitise students to the importance of consulting widely, and the effort it takes to raise awareness.

6.3.2 Proposed activities

Students should present a comprehensive strategy for an awareness campaign to involve, consult with and inform the public – such as residents, businesses, schools, etc., of proposed measures to plan for climate change in the settlement they visited during the fieldtrip.

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