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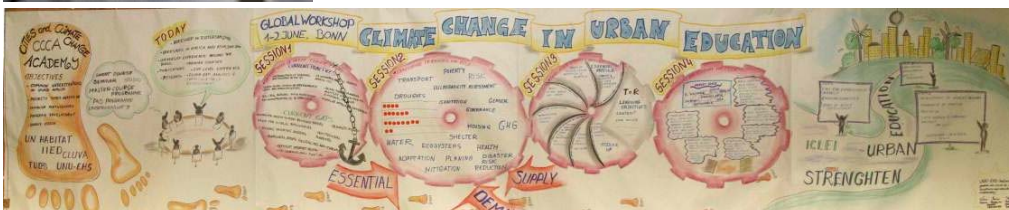
CLUVA



Strengthening Climate Change in Urban Education Cities and Climate Change Academy (CCCA)

Global Workshop

Bonn, 1-2 June 2011



Foreword

As UN-HABITAT's recently launched Global Report on Human Settlements 2011 – Cities and Climate Change, states, rapid urbanization and climate change are two powerful and converging forces that threaten to have unprecedented negative impacts upon quality of life and economic and social stability. Addressing climate change is therefore critical if we aim to build more sustainable and liveable cities. Reducing greenhouse gas emissions and increasing the resilience of human settlements and in particular their most vulnerable populations is an imperative for local governments. In response, UN-HABITAT's Cities and Climate Change Initiative now supports nearly 30 cities primarily in Asia and Africa in their response to climate change. Harnessing the experiences of these cities, tools and guidelines are produced and policy advice is provided to local and national policy makers. UN-HABITAT's Cities and Climate Change Academy aims at strengthening urban course modules of universities around the globe by providing easily adaptable climate change courses and by building the capacities of teaching staff of urban planning, urban development and related departments. The ultimate goal of the initiative is equipping urban professionals with the know-how and tools to respond to climate change.

This workshop is a milestone in the development of these course modules. UN-HABITAT is pleased to have partnered with the United Nations University, the Institute for Environment and Human Security, the International Institute for Environment and Development and CLUVA, a network of 12 universities and research institutions.

Dr. Axumite Gebre-Egziabher
Director, Global Division, UN-HABITAT

Climate change is an omnipresent and multifaceted subject that occupies our minds ever more. Its ramifications and consequences affect most of the efforts and projects of the United Nations University (UNU) and particularly its Institute for Environment and Human Security (UNU-EHS). We at UNU-EHS promote interdisciplinary research and education to enhance and broaden the understanding of the complex consequences of climate change. Within its education efforts UNU offers PhD and master programmes based on the work and expertise of the different UNU institutes. In cooperation with the University of Bonn, UNU-EHS is currently developing a joint masters-level course for next year on *The Geography of Environmental Risk and Human Security*. Within the so-called *twin concept*, developing institutionalized cooperation between UNU Institutes in a developing and a developed country, special attention shall be paid to a true South-North partnership. – Exacerbating general risks and creating specific new ones, urban environments certainly deserve particular attention. The education efforts of UN-HABITAT are in line with UNU's efforts, and UNU-EHS is delighted to act as a partner of UN-HABITAT and concur in the education on the consequences and the management of climate change in urban environment.

Prof. Dr. Jakob Rhyner
Vice Rector in Europe, United Nations University (UNU-ViE)
Director, UN University Institute for Environment and Human Security (UNU-EHS)

Executive Summary

The global workshop entitled, *Strengthening climate change in urban education: Cities and Climate Change Academy* was held in Bonn, 1-2 June 2011, ahead of the ICLEI *World Congress on cities and adaptation to climate change 2011*. It drew 34 participants representing planning universities from around the world.

The objectives of the workshop were:

- To exchange experiences on how to strengthen education on *climate change and cities* at university level;
- to reach a common understanding on how to develop generic course material for the Cities and Climate Change Academy;
- to agree on priority topics for the development of initial courses;
- to agree on partnerships (including universities from the North and South) for the development of selected courses, and
- to agree on a road map for 2011/2012.

Outcomes of the Workshop were:

- Participants shared global experiences on the status-quo, gaps and opportunities of climate change in urban education at university level.
- Six course modules for further elaboration were agreed. They cover (i) Theory and Concepts of Climate Change and Cities, (ii) Practice of Urban Climate Change Adaptation and Mitigation, (iii) Planning for Climate Change, (iv) Climate Change and Urban Water Cycle Management (incl. Sanitation), (v) Climate Change and Urban Energy (including Urban Transport), (vi) Climate Change and Shelter/Housing.
- A generic design framework was agreed for the Terms of Reference.
- Based on the course design framework, detailed substantive Terms of Reference were drafted for the six course modules.
- Partnership arrangements were proposed to ensure that the generic course modules include local and regional dimensions of climate change and urban development.
- A roadmap was agreed. It covered the finalisation of the report, a call for proposals for course module development, the selection of developers, support to developers, pre-testing (at a seminar in and for Latin America and the Caribbean), the completion of drafts, field-testing and finalisation of the course modules. Initial ideas for the next phase were also discussed.

UN-HABITAT and a Steering Committee comprising of partners will support this process.

Introduction

Despite the general recognition that urban development and climate change are interlinked in an intricate manner, universities and other educational institutions offering urban planning or urban development and management courses still tend to neglect climate change in their teaching. Where it is being addressed, it is often done in an ad-hoc manner, limited to selected components of climate change adaptation or climate change mitigation in short-term programmes, seminars or non-mandatory courses.

Adapting cities to climate change will require a well-trained cadre of professionals who understand the implications of climate change for urban development. It will also require stronger partnerships to be developed with research institutions that can provide the necessary information to guide planning decisions. Many university lecturers have recognized the importance of climate change, as evidenced by their research interests and by the number of supervised Masters and PhD students working on climate change related research papers, yet this needs to be expanded into taught courses at both the undergraduate and postgraduate levels.

The Cities and Climate Change Academy (CCCA) was initiated and endorsed by representatives of nearly 80 universities in related expert group meetings. The initiative aims to provide universities with easily adaptable modules which can help integrating climate change into existing courses and which can be combined into a semester course. The modules will be made available on an interactive web platform where participating universities can subsequently upload their module adaptations, case studies and other open source files.

For the "*Strengthening climate change in urban education – CCCA Global Workshop, Bonn, 1-2 June 2011*" **UN-HABITAT** partnered with the **United Nations University, Institute for Environment and Human Security (UNU-EHS)**, the **International Institute for Environment and Development (IIED)**¹ and the Project "**Climate Change and Urban Vulnerability in Africa – CLUVA**"². All partners are committed to addressing climate change impacts with a particular emphasis on the urban poor and are equally committed to sustainably strengthened urban education in the South. This partnership hence aims to create significant synergies.

Bringing together urban climate change experts from universities around the world, the Global Meeting of the Cities and Climate Change Academy provided a unique opportunity to assess the gaps and to identify good practices in urban climate change education. The workshop agreed on priority topics to be addressed and developed a framework for course module development, to be rolled out by mid-2012.

Bernhard Barth, UN-HABITAT

David Dodman, International Institute for Environment and Development

Vilma Hossini née Liaukonyte, United Nations University

Sandra Fohlmeister, CLUVA / Technical University Munich

¹ The International Institute for Environment and Development (IIED) is a policy research organization, committed to building a fairer, more sustainable world, using evidence, action and influence in partnerships with others. One of IIED's main institutional goals is to help build cities that work for people and the planet – including providing a better basis for designing and implementing urban climate change adaptation programmes that build resilience to current and future impacts of climate change, are pro-poor, and complement local development.

² The overall objective of the EU 7th framework programme project "CLUVA – Climate Change and Urban Vulnerability in Africa" (2011-2013) is to develop methods and knowledge to be applied in African cities to manage climate risks, reduce vulnerabilities and improve coping capacity vis-à-vis climate change (see: www.cluva.eu). CLUVA is a partnership of 12 universities and research institutions including five in Africa, in countries where the designated pilot cities are located.

Acknowledgements

The co-organizing institutions would like to express their appreciation for the mutual support for preparation and implementation of the workshop. Given that the institutions pursue similar objectives, the collaboration was logical. However, the institutions had never collaborated in this constellation before and hence this was a risky experiment. Yet, the cooperation between UN-HABITAT, the United Nations University in Bonn in particular UNU Institute for Environment and Human Security (UNU-EHS), CLUVA-Technical University Munich and the International Institute for Environment and Development was a fruit- and joyful experience for the involved parties. Participants, satisfied with the workshop and highly committed to the follow up are testimony to the success of this experiment.

We'd like to direct our sincere thanks especially towards ...

.... all workshop participants for their active and valuable contributions to the workshop and their commitment to contribute to the development of urban climate change modules;

.... Dr. Joan Clos, Executive Director of UN-HABITAT, and Patron of the ICLEI Resilient Cities Congress for his support to the workshop and the importance he accords to university education;

.... The Governments of Norway and Sweden for providing UN-HABITAT with funding for the workshop;

.... The ICLEI Secretariat, which promoted the workshop as a co-event of the Resilient Cities Congress 2011 and which supported the workshop logistics;

.... Last but not least the co-organizers want to thank the UNU-EHS interns Amina Abdullayeva and Stephanie Berliner for their outstanding support. The workshop visualization and documentation as well as the English-French translation depended on them.

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A. Background

UN-HABITAT has initiated the Habitat Partner University Initiative in order to respond to the effects of today's rapid urbanization. Universities produce the leaders, managers and planners required for adopting innovative and robust approaches to city development and they have the human capital and knowledge resources for promoting the solutions for sustainable urbanization which are needed if cities are to deal with the challenges of the future. The Initiative aims at strengthening the cooperation between UN-HABITAT and institutions of higher education, as well as facilitating exchange and cooperation between universities in developing and developed countries.

The Cities and Climate Change Initiative (CCCI) of UN-HABITAT aims to build momentum for local governments to more readily respond to the climatic threats they face (climate change adaptation) and take bold steps in reducing cities' climate footprint. CCCI aims to enhance policy dialogue and advocacy on the local, sub-national and the national level as well as on the regional and the global level. Knowledge generation and management through the CCCI website and publications, Capacity building for all stakeholders through tool development and partnerships with the professional associations, universities and local government training institutes are other key elements of the initiative.

One key output of the Cities and Climate Change Initiative aims to have Habitat Partner Universities, local universities and local continuous learning institutions adapting their teaching curricula and research to incorporate the issue of cities in climate change and exercise action-research in CCCI partner cities. It also aims at creating maximum linkages with the HPU initiative, the activities relating to climate change and Urban Planning as well as the pilot initiatives.

Workshop on Climate change and urban planning (May 2009)

The workshop held in Rotterdam 28-30 May 2009, was organized by The Institute for Housing and Urban Development Studies (IHS), the Commonwealth Association of Planners and UN-HABITAT. One of the objectives of the meeting was:

To reach a common understanding on how urban planning and design schools can better address climate change as an integral part of their curricula.

The meeting brought together urban planning practitioners and their associations as well as representatives of tertiary planning schools. Approaches to teaching on climate change were discussed and it was agreed that a virtual Cities and Climate Change Academy was to be set up. This web-platform would collect lectures on climate change and Urban Planning. The modules could be combined to develop a complete semester course. The objective would be to mainstream climate change into existing syllabi, focussing especially on university curricula of the South. A road map (from the end of 2009 to 2011) towards the Cities and Climate Change Academy was also prepared at the workshop. It was agreed that UN-HABITAT will prepare a work plan on how to implement these recommendations from the working groups.

Outcomes of the Workshop on climate change and urban planning

Cities and Climate Change Academy

- The Cities and Climate Change Academy will be a web-platform where specially designed sessions would be deposited for downloading.
- A complete package for each session would contain: a lecture/power point presentation, supplementary lecture notes, a reading list, case studies, suggestions for studio/seminar work etc.

- Sessions could be combined to develop a complete semester (or term) course, which would form one course module of a post-graduate (or graduate) degree. The objective here would be to mainstream climate change into existing syllabi.
- Individual sessions could equally be used to address climate change in a traditional semester/term course. For example a session on “transport planning and climate change” could be inserted in a general semester course on “transport planning”.
- The web-platform should be dynamic. Users should be able to provide comments, upload case studies, lectures, additional reading material etc.

Cities and climate change research

- UN-HABITAT together with the World Bank and UNEP are planning to set up a “Cities and Climate Change Research Clearinghouse” which the Cities and Climate Change Academy would support. University Partners of the Cities and Climate Change Academy would be encouraged to collaborate on Urban Climate Change research and the publication of such research in peer-reviewed journals may be facilitated.

Bringing climate change into urban specialization

- Urban planning education is as diverse as the work of planners. Planning courses and degrees are, for example, offered by planning and architecture schools or geography departments. Specializations exist for example in urban planning, regional planning, environmental-, housing- or transport planning.
- The various climate change impacts (e.g. flooding, drought etc.) and responses need to be understood by the planners. Specific modules should be developed to ensure that for each planning specialization adequate modules are available to address a wide range of expected climate change impacts.
- Whilst the focus on urban planning education is maintained, other urban programmes (such as urban management or urban development) are equally to benefit from the Cities and Climate Change Academy.

Initial steps towards the Cities and Climate Change Academy³

Three regional workshops were planned to develop a better understanding of the experiences and needs of Universities in Asia, Africa and Latin America. The first workshop was held in Manila, 1-5 March 2010. The Africa Regional workshop was held in Kampala, 3-5 May 2011 and the regional workshop for Latin America is intended to take place in November 2011.

The global workshop “*Strengthening Climate Change in Urban Education*” being documented by the present report was consequently put on the agenda as pre-event of the ICLEI World Congress on Resilient Cities 2011 in order to generate fruitful synergies and offer a unique international platform for exchange to workshop participants.

³ All documents relating to the Cities and Climate Change Academy can be accessed on the UN-HABITAT website: <http://www.unhabitat.org/content.asp?typeid=19&catid=657&cid=9317>

B. Objectives and expected outcomes of the workshop

Based on the recommendations of the Asia-Pacific and Africa regional meetings as well as on the experiences of the partners, the workshop aimed to build coalitions of universities and to advance urban climate change education globally with focus on the South.

Specifically, the workshop intended to

- reach a common understanding on how to develop generic course material for the CCCA;
- agree on priority topics for the development of initial course modules;
- agree on partnerships (including universities from the North and South) for the development of selected course modules and
- agree on the way forward including the development of a road map for 2011/2012.

The 34 Participants were composed of selected participants of the regional CCCA events in Asia and Africa, interested partners of the Habitat Partner University Initiative, including university representatives from Latin America and the Caribbean, as well as representatives of the five African partners of the EU 7th Framework Programme's project "Climate Change and Urban Vulnerability (CLUVA)". University participants of the ICLEI – Resilient Cities Congress 2011, which took place immediately after the workshop, were also invited to participate in the meeting.

The Workshop was divided into four sessions belonging to mainly two tracks. Track one (sessions 1-2) was meant to enlighten on the current state-of-the-art of climate change in Urban Education by presenting best practises, current gaps and identified options from the participating universities and research institutions. Based on a sound review of the "Rotterdam Matrix", which briefly described 20 priority modules for urban climate change education, stock should be taken of on-going education programmes, tools, case studies and available literature, merging valuable know-how and expertise from all over the world.

The second track (sessions 3-4) pursued a triple purpose: First, participants were asked to set priorities on the desired modules to be developed for the CCCA until 2012. Second, in break-out groups the prioritized modules were to be outlined. Titles, learning objectives, key elements of the contents, ideas for student-led learning and assignments were to be sketched out, providing the framework for terms of reference for their development. Third, partnerships for the further module content development should be catalyzed by offering a market-place as platform to workshop participants and promoting the elaboration of a joint road map for the upcoming steps in 2011/12.

The colourful part of the workshop was a graphic visualization process. This innovative technique incorporated visual symbols, session by session presented, discussed and highlighted questions with emotions, background and general content of the workshop. Being developed in accord with each session and the ongoing activities of the workshop together with visualization tools the process provided participants with an opportunity to pursue upcoming results which were appearing on the structurally completed picture (see Annex 3). A further step of the visual facilitation called "Marketplace" was a result of the partnership development session and aimed at linking universities from the North and South to collaborate on various questions and a response to the expressed need of the participants to initialize a Community of Practice on Urban Climate Change Education.

C. Summary of Proceedings

Opening and Introductions by Workshop partners and participants

The meeting was opened by Mr. Bernhard Barth (UN-HABITAT), Ms. Sandra Fohlmeister (CLUVA / TUM), Ms. Vilma Hossini (UNU-EHS) and Mr. David Dodman (IIED). Welcoming the participants, the representatives of the four co-organizers stressed how satisfied they were about this collaborative effort between the organizations as well as the unique opportunity of bringing representatives from urban planning and urban development universities from all over the world together. The opening session was concluded by a self-introduction of the participants, high-lighting their individual expectations, as well as a short presentation on the workshop objectives and the programme (see Annex 1) and the accompanying graphic visualization process by Ms. Vilma Hossini.

Session 1: Taking stock of urban climate change education

Session 1a: Current practices – current gaps

The first session was introduced and facilitated by Vilma Hossini (UNU-EHS), aiming at presenting best practices and making transparent current gaps in Urban Education on Climate Change. Examples from the North, with emphasis on the United States, Africa (case study Botswana), Asia (case study from the Asian Institute of Technology, Thailand) and Latin America (case study from El Salvador) illustrated current approaches and shortcomings, thus serving as stimulus for further discussion.

Prof. Elisabeth M. Hamin (University of Massachusetts, Amherst, USA): “Climate Change pedagogy in Planning Education: an overview” The presentation introduced the results of an overview of university curricula with regards to climate change issues. It was primarily focused on universities in the United States, and concentrated on how and where planning related to climate change was being taught and whether the emphasis was on adaptation or mitigation. The findings showed that between 2010 and 2011 (since the overview compared these two years), the numbers of faculty, core syllabi, and courses related to the study of climate change within urban programmes had all increased. With respect to the mode of delivery, seminar was more popular than studio, and with respect to content, more courses dealt with mitigation than with adaptation. Most popular topics covered in seminars included risk and resilience, climate action planning, federal and state laws, and development. Studios in mitigation mainly focus on training students in greenhouse gas emission assessments, the use of ICLEI software, land use and transportation models, and government policies. Studios in adaptation emphasized finding climate forecasts for the region, determining vulnerabilities, assessing required changes to regulation, and applying geographic information system (GIS). The main conclusions drawn from this overview according to Prof. Hamin were that climate change adaptation and mitigation was still an emerging area of teaching. Overall, one can infer that climate change was only just entering urban university programmes as an academic subject.

Prof. A. C. Mosha (University of Botswana): “Incorporating Climate Change in Planning Specializations and other Urban Education courses at the University of Botswana” started his presentation with some facts by stating that the impact of climate change was rapid and irreversible till now. Its effects were visible in all human settlements, most of all in cities, which, while occupying only 2% of the land mass, accounted for 70% of emission. The devastating impacts of climate change were apparent not only in the degradation

of nature, but also in damage to infrastructure and accompanying human insecurity. A way to reverse this trend lied in effective urban planning, according to the [Global Report on Human Settlements 2011, Cities and Climate Change: Policy Directions](#).

Prof. Mosha pointed out that climate change was taught in many Programmes and courses at the University of Botswana, though there was no single established Programme specializing in this subject. However, the revised curricula of the five-year undergraduate course in urban and regional planning within the Department of Architecture and Planning (DAP) addresses the issue of climate change and planning in numerous courses from the first to the final year. Beyond that, a compulsory stand-alone course called Urban Planning and Management for *Climate Change (12 weeks, 2 credits)* familiarises students with theoretical underpinnings of climate change and its mitigation through application of sustainable spatial planning practices, as well as providing guidance for spatial planners on how to meet the economic, social and environmental challenges that climate change raises for urban and regional development. There are 11 more courses related to climate change, varying in format and including lectures, readings, seminars, and studios. Some of the recommendations to strengthen climate change education given by Prof. Mosha included enhancement of the DAP modules already prepared, possibly through collaboration/partnerships with institutions from the North and South. The African Association of Planning Schools could continue organizing workshops or seminars on key topics. Finally, compulsory mainstreaming in climate change curricula needed to be introduced, so Mosha.

Dr. Edsel Sajor (Asian Institute of Technology – AIT): “Research and Teaching on Climate Change in Urban Courses at the AIT” Preliminary assessment of teaching on climate change in the urban sector and research at the AIT showed that there is as of yet no specialized course. The 3 courses most related with climate change are part of the Urban Environmental Management (UEM) Programme. They are:

- The UEM workshop – a core course with an applied approach where students are required to do city-based exercises in climate change topics;
- Urban Planning and Environment – an elective that presents an introduction to climate change theory and case studies;
- Disaster Management and Urban Planning – an elective that combines lectures and field visits evaluating structural and non-structural measures in disaster management.

Teaching related to climate change includes a lesson on climate change in the syllabus of a course. Research in the fields of climate change adaptation and mitigation has been increasing at the Master’s and PhD levels in recent years. Over the past 5 years, 17 out of 94 MSc theses (18%), and 8 out of 19 PhD dissertations have been on topics related to climate change. Climate change research projects are hosted by 3 different constituting parts of the AIT. Climate change research is also done at the *Center of Sustainable Development in the Context of Climate Change* (SDCC) with its 5 sections: Vulnerability and Disaster Risk Reduction; Land and Water Resources Management for Sustainable Production and Consumption; Urban and Rural Quality of Life and Sustainability; Low Carbon and Cleaner Production Technology; Business and Innovation Models for a Green Economy.

Growing interest in the field of climate change is evidenced by the number of graduate dissertations on the topic, and an increase in research grants applications by AIT faculty (many in partnership with other institutions in the region). A number of these winning projects have great potential for feeding into Cities and Climate Change teaching and training, and development projects.

Guillermo Altamirano and Marielos Marín (Central American University of Ecuador): *"Climate Change in El Salvador – UCA's approach to the topic"* introduced the workshop participants to the Central American University (UCA) where topics of climate change, urbanism, regional planning and sustainability are important. The UCA offers two Programmes related to climate change at the MSc level – Local development and Environmental Management – and is currently developing a third one entitled "Regional Planning". The university is also strong in the field of research with 4 published case studies focusing on urban and housing issues, and its study of housing building technologies with a focus on seismic hazards, steel frame construction, and recycling materials. UCA contributes to building municipal capacities through different outreach actions including consultancy, public debates and conferences, and student social service and projects. Despite laudable achievements there remain challenges to be solved. The most important, stated Marín, was programme sustainability, i.e. the continuous offer of innovative programmes and courses, as well as funding security. A further challenge is improving the quality of training for government employees and local professors, as well as PhD opportunities for the professors. Finally, the university would benefit from securing state support, be it in the form of isolated initiatives, or regional to national strategies.

Discussion

Questions raised towards Prof. Hamin hinted at the necessity to clarify the term "studio". Furthermore, the comment was added that the American Planning Association (APA) also dealt with the topic of Climate Change. Prof. Mosha's presentation generated significant interest as an exciting good practice. Workshop participants asked for the main institutional drivers of the mainstreaming efforts undertaken at the University of Botswana, and identified the Royal Town Planning Institute as one of the key motivating players in the whole process as the University sought RMIT accreditation. Other issues of discussion were the question of how to start such a mainstreaming process, whether to start it already at undergraduate level or not and which differences existed for example between the Climate Change impact in Botswana (land-locked) and the Caribbean (small island countries).

Session 1b: CLUVA: gap analysis – starting point for capacity building

Session 1b zoomed-in on the African partners of the CLUVA (Climate Change and Urban Vulnerability in Africa) Project. This project is funded under the European Union's 7th framework programme. The session highlighted in particular the capacity needs of universities for strengthening educational programmes related to Urban Climate Change Adaptation. Facilitated by CLUVA Task Leader (Task 4.2 "Educational programmes as long-term capacity-building") Sandra Fohlmeister, the CLUVA partners presented the current status of their curricula, opportunities and barriers to mainstreaming Urban Adaptation to Climate Change as well as precise capacity needs. Based on the results of their assessments, all partners agreed that the Cities and Climate Change Academy would mean a suitable opportunity for enriching their curricula by providing valuable contents precisely the right point in time. This was not only due to on-going reforms which substantially increased institutional flexibility regarding curricula adaptations in the countries, but also due to the module-wise approach of the CCCA which matches the universities' expectations apparently better than alone-standing new Master Programmes on Climate Change which might lack the necessary market demand and financial sustainability on the long run.

Dipl. Geographer Sandra Fohlmeister (CLUVA / Technical University Munich): *"CLUVA 'Climate Change and Urban Vulnerability in Africa' – WP 4 Research Capacity building – Task 4.2 Educational Programmes"* provided the contextual background for the presentations of the African CLUVA partners by introducing the workshop participants to the EU-funded project's overall goal, partner network, work packages and objectives related to capacity building. Under implementation by a network of 12 European and African partner institutions from 2011 to 2013, CLUVA aims at developing methods and knowledge to be applied to African cities to manage climate risks, reduce vulnerabilities and improve coping capacity and resilience vis-à-vis Climate Change (see also: www.cluva.eu). Selected partners in this endeavour are the case study cities Addis Ababa, Ethiopia; Dar es Salaam, Tanzania; Douala, Cameroon; Ouagadougou, Burkina Faso and Saint Louis, Senegal. Among others, Work Package 4, Task 4.2 "Educational Programmes as long-term capacity building" intends to support the involved partner universities in developing their educational programmes and curricula at MSc level. Joining forces with UN Habitat's CCCA efforts is thus a desirable and logical step from the CLUVA partners' perspective.

Dr. Kumelachew Yeshitela Habtemariam (CLUVA / Addis Ababa University): *"Curricula Needs Assessment for Mainstreaming Urban Adaptation to Climate Change at the EiABC - Ethiopian Institute of Architecture, Building Construction and City Development"* introduced the audience to EiABC's on-going Master Programmes "Environmental Planning and Landscape Design", "Urban Design and Management" and "Housing and Sustainable Development", hinting at the absence of special courses related to Urban adaptation to Climate Change. Given the fact that a new MSc Programme in Urban Planning is close to its launch and based on its opportunities provided by partnerships with CLUVA, ZEF Bonn and IUP Hannover, EiABC sees several options of embedding CCCA modules in its current curricula. Bigger constraints mentioned by Dr. Kumelachew were the insufficient access to teaching materials for courses on adaptation to climate change and limited internet connectivity and thus restricted options to use web-based teaching methods. Furthermore, training of the responsible EiABC staff in teaching Climate Change related courses would be highly desirable, as there are currently only two staff in the position to do so.

Prof. Dr. Samuel Yonkeu (CLUVA / University of Ouagadougou): *“Curricula Needs Assessment for Mainstreaming Urban Adaptation to Climate Change at the University of Ouagadougou and the Management and Computer Sciences High Institute”* presented to the workshop participants the results of his assessment undertaken at the University of Ouagadougou’s Department of Geography, Environmental Technology and Sustainable Development Institute and the Management and Computer Sciences High Institute of Ouagadougou, of the Business School. Although all five Master Programmes under examination were concerned with urban planning and environmental or social risk analysis, none of them has taken climate change adaptation into consideration up to now. Thus, the desirable future of strengthening the curricula according to Prof. Yonkeu consisted in a step-wise approach, ranging from mainstreaming urban adaptation in undergraduate level programmes over possibly creating a complete MSc degree course in urban planning and climate change to establishing a community of practice including researchers, decision makers, the private sector and other stakeholders.

Prof. Dr. Thomas Tamo Tatietse (CLUVA / University of Yaounde I): *“Curricula Needs Assessment for Mainstreaming Urban Adaptation to Climate Change at the University of Yaounde I, Ecole Polytechnique, Cameroon”* presented his university’s current MSc level programmes with relevance to Urban Adaptation to Climate Change. These consisted of the courses “Urban Engineering”, “Urban Infrastructure”, “Structural Engineering”, “Urban Geography” and “Urban planning and management”. He stated that the courses needing Climate Change related contents with highest priority were “Urban Engineering” and “Urban Infrastructure”, consequently resulting in an increased interest in the CCCA modules “Climate Change and Urban Transport” as well as “Climate Change and Urban Water & Sanitation”. Major barriers were seen by Prof. Tatietse in insufficient reference materials and publication outlets and a low-level of coordination between the existing courses. As positive aspect he mentioned the strong network of the University of Yaoundé I with donors and international networks of universities within Francophone countries (AUF, OIF), National Science Foundation, Edulink, Intra-ACP and the African Universities Association (AUA).

Likewise his CLUVA colleague, **Prof. Dr. Alphonse G. Kyessi (CLUVA / Ardhi University):** *“Curricula Needs Assessment for Mainstreaming Urban Adaptation to Climate Change at the Ardhi University, Dar es Salaam”* stated the positive momentum of Ardhi University in integrating Climate Change-related contents in its on-going curricula. Among its 24 undergraduate and 19 postgraduate Programmes, especially the MSc in Urban Planning and Management, MSc in Disaster Risk Management and MSc in Engineering and Housing seemed suitable for such an endeavour. Having a Disaster Management Training Center in place and capacity built up by the Peri-Peri U initiative, Prof. Kyessi identified several opportunities of Ardhi to further strengthen its curricula. As key issues requiring support Prof. Kyessi mentioned access to library resources of universities and continued technical support in terms of networking and research collaboration South-South and South-North, next to financial support to courses, equipment and books. His presentation gave a clear answer to the question whether a standalone new Master Programme should be established or whether Urban Adaptation to Climate Change should be integrated in existing curricula: the solution clearly favoured by Ardhi University was Mainstreaming, and this not only at the postgraduate level, but also at the undergraduate level courses including urban planning, architecture, quantity surveying, environmental sciences, geography, development studies, among others. Furthermore, short courses for practitioners, NGOs and members of parliament should be on the agenda. He also stressed that universities should play a role in the development of awareness tools for urban dwellers, concluded Kyessi.

Prof. Dr. Cheikh Sarr (CLUVA / Gaston Berger University): *“Curricula Needs Assessment for Mainstreaming Urban Adaptation to Climate Change at the Gaston Berger University, Saint-Louis, Senegal”* agreed with the CLUVA colleagues that the integration of Urban Climate Change-related contents into his university’s curricula couldn’t come at a better point of time. In the special case of his department of Geography, the on-going reform (BSc/MSc) opened doors to do so. However, institutional barriers persisted and awareness creation among teaching staff was necessary to reach a common understanding. Desired next steps from the viewpoint of Prof. Sarr were to create a new MSc programme on Urban Vulnerability and to integrate a module on urban research in the on-going MSc Programme of Geography. Considering the foreseen CCCA modules, Gaston Berger University ranked “Climate Change and Disaster Risk Reduction”, “Climate Change and Urban Assessments” and “Climate Change and Ecosystem-based adaptation” as of highest priority.

Discussion:

Workshop participants asked Prof. Tatiétsé which had been the criteria for the preliminary CCCA module ranking in the framework of his university’s capacity needs assessment. Prof. Tatiétsé replied that the School of Engineering’s students’ background and capacity building needs had been decisive. Another question raised by the audience was whether the CLUVA partners would see options to mainstream “Climate Change” also below or above MSc levels? While the CLUVA partners of Burkina Faso and Tanzania clearly identified options also below and beyond MSc levels, Cameroon judged mainstreaming procedures below MSc level to be more difficult. Other items tackled during the discussion were joint degrees, which were still a barrier and the need of multiple delivery mechanisms for the CCCA modules due to the highly diverging internet access capacities from country to country. Workshop participants stated that ideally preparatory courses on Climate Change should already take place at the undergraduate level, while specialization courses should subsequently be available on MSc level. For wrapping up, one participant stated that curricula development would be a legitimate goal, however, should go beyond and result in a more integrated and iterative process in the end.

Session 2: Developing Priorities for the CCCA

Session 2 was introduced and facilitated by David Dodman (IIED). The session took a look at the work which had been done by CCCA during the two regional workshops in Manila, Philippines, March 2010 and Kampala, Uganda, May 2011 respectively. A sound recap provided by one representative each of the Asian and African regional workshops enabled all workshop participants to catch up and reach a common understanding of the steps undertaken in the past. The session provided a transition to the next sessions of the workshop. The session further allowed for the participants to reflect on the CCCA objective of reaching a common understanding on how urban planning and design schools can better address climate change as an integral part of their curricula.

Session 2a: The CCCA – lessons from Asia and Africa

Prof. P.K.S. Mahanama (University of Moratuwa): “CCCA in Asia – Workshop & follow-up”

The workshop comprised of a two-day expert group meeting and a three day university seminar with students, sandwiched between the expert meeting sessions. The student seminar allowed the experts to test innovative modules and to engage students on Climate Change and Urban Planning. Based on this suggestions were provided on how to develop more generic course material for the Cities and Climate Change Academy. The six modules that were tested are:

- *Climate Change and Urban Planning (an introduction);*
- *Conducting Climate Change Vulnerability Assessments;*
- *Conducting City Climate Change Footprint Assessments;*
- *Cities and Climate Change Mitigation;*
- *Cities and Climate Change Adaptation;*
- *Developing Local Climate Change Action Plans; and,*
- *Mainstreaming Climate Change into Existing Statutory Plans.*

To the University of Moratuwa (Sri Lanka), the workshop provided additional impetus that assisted in the integration of climate change into various courses. This included revisions being made to the B.Sc. programmes, and to the process of supervising undergraduate research in this area.

Ms. Willi Faling (University of Pretoria): “CCCA in Africa – Workshop & follow-up”

The regional workshop in Africa brought together professors and lecturers from Algeria, Botswana, Ethiopia, Kenya, Mozambique, Nigeria, South Africa, Tanzania and Uganda. In addition students from Makerere University presented their M.Sc. research.

The participants stressed that the global approach of the Cities and Climate Change Academy needed to address Africa-specific concerns and good practices. The participants highlighted that the uniqueness of African urban development / African urbanization needed to be recognized. It was hence critical to ensure that African case studies are included in the course modules and that there is adequate African representation in the consortia. African good practices existed and are identified (e.g. curriculum in Botswana) and climate change programmes in numerous cities. To ensure suitability for African universities, the modules needed to be tested in Africa.

The group identified course modules which were of particular priority to African universities and expressed hope that these priorities could be considered in this Global Meeting:

- Conducting Urban Vulnerability Assessments;

- Climate Change and Shelter;
- Climate Change adaptation and mitigation planning;
- Climate Change and Urban Water and Sanitation Challenges;
- Climate Change and Urban Poverty (including food security);
- Urban Disaster Risk Reduction in the age of Climate Change.

Based on inputs/presentations from the participants, outlines of the following course module syllabi were developed:

- Module: Urban Climate Change Vulnerability Assessment
- Module: Urban Disaster Risk Reduction in the age of Climate Change
- Module: Urban Poverty Reduction and Climate Change
- Module: Developing Comprehensive Climate Change Plans

Discussion

The discussion after the presentations focussed on the challenge of developing generic modules which are applicable in different contexts which may be characterized by different climatic and environmental conditions, different economic and social parameters as well as different governance systems.

Session 2b: Working groups: updating the Rotterdam Matrix

The presenters' inputs and the plenary discussions of sessions 1 and 2 provided the participants with a sound basis to enter into a first breakout session in working groups in the afternoon of day 1. Tasked to take stock of on-going education programmes, tools, case studies and relevant literature, the participants were introduced to the "Rotterdam Matrix"⁴ contributing their individual experience and professional background to the foundation laid during the Rotterdam meeting of 2009.

In a first step, participants were asked to join-in according to their interests and ability to contribute to take stock on the modules which had been clustered on boards as follows:

Cluster 1:

- ❖ Climate Change and Justice
- ❖ Climate Change and Gender
- ❖ Climate Change and (Urban) Health
- ❖ Climate Change and Food Security

Cluster 2:

- ❖ Introductory session to Climate Change
- ❖ Climate Change and Adaptation and Mitigation Planning
- ❖ Climate Change and Urban Ecosystems / Biodiversity
- ❖ Climate Change and Land Use Planning
- ❖ Climate Change and Shelter / Housing / Building Construction

Cluster 3:

- ❖ Climate Change and Water and Sanitation
- ❖ Climate Change and Disaster Risk Reduction
- ❖ Climate Change and Transport Planning
- ❖ Climate Change and Solid Waste Management
- ❖ Climate Change and Urban Energy

Cluster 4:

- ❖ Climate Change and Urban Vulnerability Assessment
- ❖ Climate Change and Urban Greenhouse Gas Assessments
- ❖ Climate Change and Governance

Guiding questions to be answered by the working groups in this endeavour were:

- ❖ **Who/What/How:**
Who (in particular which university) is currently working in this area, offering What type of courses and How are these being implemented?
- ❖ **Interested in module development:**
Are you / might your institution be interested in supporting the development of modules (to be specified for each module)
- ❖ **Priority case studies:**
Which important case studies currently exist related to the module topic?
- ❖ **Essential reading:**
Which literature is regarded as being relevant related to the module?

⁴ The development of the original "Rotterdam Matrix" is explained and reproduced in the meeting report: "Workshop on Climate Change and Urban Planning, Rotterdam, 28-30 May 2009"
http://www.unhabitat.org/downloads/docs/9340_3313_Workshop_onCCandUrbanPlanning.pdf

Hereby, participants were free to propose further possible modules according to their individual working group's ideas and upcoming discussions.

In a second step, workshop members were asked to freely rotate between the four module clusters in order to contribute their know-how also to the stock-taking results achieved by the working groups they had not been participating in.

In a third and final step, participants were expected to rank the modules being most relevant to them within their individual working groups, taking into consideration the availability of information/know-how/case studies/literature (supply perspective) and own interests.

Following this ranking procedure, the remaining breakout-session was dedicated to the task of pre-designing the modules' development framework in a more generic manner. The working groups thus sampled their preliminary ideas on questions like what precisely a module should consist of; what should be the learning objectives; how should assessments take place; which role should self-learning play, among others.

Thanks to the intensive working groups' efforts, a sound update of the "Rotterdam Matrix" was done in this session. Additional optional CCCA modules proposed by the participants were "Climate Change and Economic development", "Climate Change and Drought", "Climate Change and Urban Planning / Urban Design", "Climate Change and Flood Management" and "Climate Change and Coastal Zone Management / Urban Settlements". For detailed results related to the updated "Rotterdam Matrix", see Annex 4.

Furthermore, all working groups concluded day 1 by having discussed and outlined the modules' development framework more in detail. These results were presented on day 2, following session 3a "Existing curricula, syllabi, tools" (see session 3b).

Session 3: Developing the module content

Session 3 had a triple goal: in its first part (3a) examples of existing tools, curricula and syllabi from the North and South were presented and discussed. The sub-session, facilitated by Vilma Hossini (UNU-EHS), was designed to provide the participants with additional ideas on how to design course modules. In its second part (3b), the session aimed at agreeing the framework of the modules (design and key components) and in its third part (3c), being the “heart” of the workshop, six modules were prioritized and further elaborated. Furthermore, the modules’ content should be pre-designed and inputs be provided by the workshop participants for Terms of Reference which would be reflected in a call for expressions of interest to university consortia after the workshop.

Session 3a: Existing Curricula, syllabi, tools

Mr. Stelios Grafakos (IHS Institute for Housing and Urban Development Studies, Erasmus University Rotterdam): *“CLIMACT Prio: A decision support tool for CLIMate ACTions PRIOritization”* kicked-off day two with the presentation of a computerized, excel-based tool titled “CLIMACT Prio”, which serves to support stake-holders’ decision making process for climate change actions by performing a stepwise multi criteria analysis evaluation. Developed by IHS Rotterdam, CLIMACT Prio has been applied in diverse contexts so far, ranging from capacity-building workshops for professionals (EU project “Covenant CapaCITY”) to research (Dhaka city) or Technology Needs Assessments (UNDP) and NAPA elaboration (UNFCCC). According to Grafakos, the tool’s user-friendliness and logic application in 6 steps (1 – Vulnerability: identification of highly vulnerable sectors; 2 – Adaptation actions; 3 – Criteria identification; 4 – Scoring: building up the Impact Assessment Matrix; 5 – Criteria Weighting and 6 – Results – Ranking) make it a simple, flexible and systematic capacity-building instrument. The tool would be suitable for Master’s students and lecturers (ToT workshops) at the university level. Future developments of the tool being on the agenda for 2011/12 are: different weighting methods, new modules on Vulnerability and GHG emissions assessments and on Financial Analysis.

Dr. David Dodman (IIED International Institute for Environment and Development): *“MSc module Adapting Cities to Climate Change at the University College London and Teaching Resources”* The Development Planning Unit (DPU) at University College London (UCL) offers an annual MSc Module on ‘Adapting Cities to Climate Change’ that is an optional component of six different MSc degrees in the DPU, and is also available to Masters and PhD students from elsewhere in UCL. The course is intended to link theory, policy and practice; frequently provides a basis for students producing their dissertations on related topics; and is intended to equip future national and global policy makers with the necessary knowledge and skills to include climate change in their work in urban areas. The course covers the impacts of climate change in urban areas, the contribution of cities to climate change, the ways in which climate risk is distributed (both between and within cities), policy and scientific responses to climate change, theoretical and practical analyses of resilience and adaptation, urban governance for climate change, and integrating climate adaptation with sustainable urban development.

Environment and Urbanization, a journal produced by IIED, is also a useful resource for the development of courses. It is published twice a year, and so far featured more than 35 papers on climate change in the last five years (as well as many more that are relevant, including on issues such as disaster risk reduction and ecological footprints). A free print subscription is available for any NGO or teaching institution in a low- or middle-income nation, and online access is extensive (all but the four most recent issues are totally free of charge). The journal can be accessed at <http://eau.sagepub.com>.

Dr. Rosemary Awuor-Hayangah (University of Kwazulu Natal): *“Integrating Climate Change in Planning Education: The case of University of Kwazulu Natal, Durban – South Africa”* shed light on the University of Kwazulu Natal’s approach to integrating Climate Change in its planning education and challenged the audience with the ambitious question of how appropriate teaching methodologies could be generated that would lead to increasing the knowledge and passion of the planning students to become Climate Change champions. Among the existing planning programmes at UKZN MSc in Town and Regional Planning, MSc in Urban & Regional Planning (Development Planning) and MSc in Urban & Regional Planning (Environment & Planning), hitherto only the MSc in Town & Regional Planning incorporates Environmental Planning (including Climate Change) to a certain extent (8 credits). Beyond that, UKZN is currently considering to elaborate and integrate a new module on Climate Change also in its MSc in Urban & Regional Planning (Environment & Planning). However, barriers to recognize the importance of Climate Change in Urban planning curricula still remain at the university level, hence awareness-raising among colleagues is a Must to go ahead. According to Awuor-Hayangah the way forward should be incremental, heading at mainstreaming Climate education into established modules, fostering dissertations and training staff appropriately right now, while developing new modules and new MSc Programmes for the long run.

Ji Xi (Peking University): *“Status of Peking University’s curricula on cities and climate change”* Dr. Ji Xi offered to share her experience in teaching and research on cities and climate change with the participants, providing insights to Peking University’s curricula. Having screened related colleges, such as the School of Economics, the College of Urban and Environmental Sciences, the College of Environmental Science and Engineering and the College of Engineering, the current situation was that there were both curricula on cities as well as curricula on climate aspects in place, however, that curricula merely related to cities in climate change were still to be prepared. Due to the relevance to Peking city, research on Climate Change at the School of Economics centred especially around topics such as the carbon inventory of cities, the relationship between urbanization and energy consumption/GHGs, urban and rural carbon finance and assessment frameworks of low carbon cities.

Antonella Vassallo (IOI – International Ocean Institute, Malta): *“On-going activities and experiences of IOI relevant to capacity development in Adaptation to Climate Change”* The International Ocean Institute (IOI) was founded in 1972. The institute’s main areas of activity are education and training, research programmes and capacity building projects, raising awareness, public outreach and advocacy, assistance in drawing up strategic plans, codes of practice, laws and regulations, and consultative services. The IOI offers a 5-week intensive course on the regional governance for Mediterranean, Black, Baltic and Caspian Seas. There is also a two-month training programme on Ocean Governance: Policy, Law and Management that has been conducted at Dalhousie University in Halifax, Nova Scotia each summer since the course was initiated by Elisabeth Mann Borgese in 1981. In 2011 IOI plans to launch a Master’s in Ocean Governance. This will be an extension and adaptation to Master’s Degree level of the current IOI flagship course contents. The IOI also participates in several publications

related to ocean governance. One of them is The Ocean Yearbook, a collaborative initiative of the IOI and the Marine and Environmental Law Institute at the Schulich School of Law, Dalhousie University, in Halifax, Canada. Another noteworthy publication is a volume entitled *Sharing Innovative Experiences: Examples of Successful Experiences in Coastal Community Development*. It is a joint initiative of the Special Unit for South-South Cooperation, hosted by the United Nations Development Programme (UNDP SS) and the IOI, and presents 19 case studies of the broad ingenuity and creativity of selected coastal communities working with the IOI Operational Centres in seeking solutions to mitigate impacts from land-based activities by developing tools and measures locally to improve their prospects for survival and prosperity.

Session 3b: Development of generic module design and content

STEP 1: Working Group presentations on “Taking stock” and “Generic Module content outlining”

At the beginning of Session 3b representatives of the four working groups of the previous day summarized the stock-taking exercise which they had completed by complementing the initial “Rotterdam Matrix” (see Annex 4).

The results of **Working Group 1** (Cluster 1) were outlined by Barbara Norman (University of Canberra) focusing on the Rotterdam Matrix’ modules “Climate Change and Justice”, “Climate Change and Gender”, “Climate Change and Urban Health” and “Climate Change and Food Security”.

As most relevant, this working group ranked the modules “Climate Change and Urban Health” and “Climate Change and Food Security”.

Prof. Mosha (University of Botswana) presented on behalf of **Working Group 2** (Cluster 2), more precisely the “Introduction session on Climate Change”, “Climate Change and Adaptation and Mitigation Planning”, “Climate Change and Urban Ecosystems / Biodiversity”, “Climate Change and Land Use Planning” and “Climate Change and Shelter / Housing / Building Construction”.

The Group suggested adding three additional topics, namely: Climate Change & Economic Development, Climate Change and Drought, Climate Change and Urban Design.

Delivery Challenges were especially seen in: 1. Skills: Need for Re-skilling, 2. Infrastructure, 3. Equipment, 4. Funding, 5. Technology, 6. Governance, 7. Space, 8. Marketing, 9. Teaching Materials, 10. Interest and willpower ambitions / passion, 11. Sustainable outcome for staff and students and 12. Overall course outcome.

Guillermo Altamirano (University of El Salvador) shared the results of **Working Group 3** (Cluster 3) with the plenary, dealing with the modules “Climate Change and Water and Sanitation”, “Climate Change and Disaster Risk Reduction”, “Climate Change and Transport Planning”, “Climate Change and Solid Waste Management” and “Climate Change and Urban Energy”. As most relevant module the group identified the one dealing with “Energy & Transport”.

Edsel Sajor (AIT) summarized the **Working Group 4 results** (Cluster 4) related to modules “Climate Change and Vulnerability Assessments”, “Climate Change and Greenhouse Gas Emissions” and “Climate Change and Governance”, while clearly stating that the modules on Vulnerability Assessments and Governance seemed the most relevant to his group.

In terms of the generic module design the inputs of the groups are consolidated in the box below (detailed presentations of each of the working groups are presented in Annex 8)

Generic Module Design and components as proposed by the CCCA global workshop Module Note

- i. Module title
- ii. Module objective(s)
- iii. Expected Outcomes
- iv. Rationale for the Course
- v. Short description of module in the broader context of the Cities and Climate Change Academy, the use of the lecture (lectures) and student-led learning, and how to use the module in different contexts and for different target learners.
- vi. Learning objectives
- vii. Target learners
- viii. Key content of the course
- ix. Key ideas for student-led learning (seminars, studios, guest speakers, gaming, scenario planning etc.)
- x. The use of local case studies
- xi. Suggestions on collaboration with other departments

Annexes:

- xii. Lecture (or lectures if double module (i.e. double the contact hours)
- xiii. Lecture notes
- xiv. Reading list
- xv. Case studies from different regions

Delivery modes

- Lectures
- Group-based problem solving
- Hands-on exercises
- Field work
- Introduction to basic tools
- Online chat groups, facebook
- Guided reading unit
- Guest lectures
- Case study assessments
- Experiential / Community learning
- Simulations / Scenarios / Gaming
- Distance learning / Video Conferences
- Teaching tools (IVote, Cell Phones, etc): Soft + Hardware and e-Blackboard).
- Internships
- Student and Staff Exchange.
- Virtual roundtable discussions/studios
- Repository of documents and photographs
- Videos, webcasts, etc.
- Examinations / assessment Tools

Session 3c: Module prioritization and content outlining

STEP 2: Plenary session “Agreeing on priorities for the CCCA”

Having substantially examined the “supply side” by taking stock of the existing capacities, key reading materials, case studies and on-going activities related to “Cities and Climate Change” on day 1, and taking also into consideration the “demand side” by relating to UN Habitat’s regional workshops in Manila and Kampala, the workshop participants were asked in the next step to agree on priorities for the CCCA. A total of six

modules were to be identified and selected from the “Rotterdam Matrix” which should be the first ones to be elaborated and pilot-tested in the further course of 2011 until spring 2012.

After a rather “hot” debate, participants agreed upon the first four modules as follows:

- **Essential module “Theory and Concepts of Climate Change and Cities”**
- **Essential module “Practice of Urban Climate Change Adaptation and Mitigation”**
- **Module “Planning for Climate Change”**
- **Module “Climate Change and Urban Water Cycle Management (incl. Sanitation)”**

For selecting the remaining two modules, each participant received two votes, having the right to distribute them according to his/her university’s interests or preferences. From this voting process, the modules **“Climate Change and Energy & Transport”** and **“Climate Change and Shelter/Housing”** were ranked on positions 1 and 2.

Wrapping-up this prioritization process, workshop participants received the opportunity to state their interest in actively taking part in the individual modules’ elaboration in a written manner by placing their names on flipcharts sub-divided by the 6 identified modules.

STEP 3: Break-out session “ToR pre-design for Module development”

In the following step, workshop participants were tasked by facilitator Sandra Fohlmeister (CLUVA/TUM) to elaborate inputs for the Terms of References (ToR) to be tendered in the further course of the CCCA establishment. The purpose of this breakout session was thus to outline the six modules’ content development more in detail.

Being split into six working units, the individual teams were instructed as follows:

- ***In your group select a rapporteur, please prepare a powerpoint presentation!***
- ***Suggest a title for your unit/module***
- ***Develop:***

Undergraduate	Post-graduate
Learning Objective	Learning Objectives
	Target learners
Key content of the module (lecture +)	Key content of the module (lecture +)
Key ideas for student-led learning (seminars, studios...)	Key ideas for student-led learning (seminars, studios...)
Case studies needed (type of case studies and examples)	Case studies needed (type of case studies and examples)

- ***Who else should be involved (e.g. departments)?***

To use a common language, the term “Module” was defined as follows:

“A module is a unit with a refined title, consisting of a minimum of 2 contact (lecture) hours plus additional possible seminars/studios. An undergraduate or post graduate course would usually consist of 12 to 15 modules, that is, one module per week.”

STEP 4: Presentation of results on draft Terms of Reference for the modules**Module “Climate Change and Urban Water Cycle Management”**

The working group results on the module “Climate Change and Urban Water Cycle Management” were presented by Rosemary Awuor-Kayangah (University of Kwa-Zulu Natal). The team composed by Rosemary, Altantuul, Nadjat and Nikolai pre-designed the module as follows:

Module “Climate Change and Urban Water Cycle Management”			
	UNDERGRADUATE (up to six modules)	POSTGRADUATE (up one semester)	Outcome
Learning Objective	To understand the impact of climate change on the Urban Water Cycle	<ul style="list-style-type: none"> To be aware of the techniques and approaches for urban water management. To understand the concepts of Water Sensitive Urban Design and to be able to apply these. To have a good grasp on “How to plan for climate change” 	Ability to Mainstream climate change into urban planning. To understand impact of climate change on water resources. <ul style="list-style-type: none"> To understand current land use & level of permeability of the soils in the city To learn from best land use models. Understand the water geography To understand the threshold of permeability to be respected. To understand the hydro-system components features (basin, banks, valley underground water table.) To understand the characteristics of the soils (structure; frozen level of water. Contamination & erosion factors of soil. Live cases to learn how to deal with real issues. Basis of biogeochemical cycles. Projected climate change impacts in the locality Local climate change adaptation strategy.
Target Learners		Urban planners, Architects, landscape designers, environmental engineers etc	
Key Content of Module	Global water cycle (natural water, oceans & receives), Urban Water cycle, Water related risks; Technology (cleaning, by Plants, Networks & Infrastructure), Urban water Management and Governance	In addition to in-depth content for Undergraduate Module; Environmental Impact Assessment	
Key ideas for student-led learning: Seminars Studios: simulations	Global approach (interdisciplinary, spatial scale & inter-sectoral, River basin management I), Low impact technologies, Participation Different climatic regions	Simulations Scenarios Seminars Project	
Case Studies needed (type of case studies and example)	Water treatment Waste treatment remediation problems <ul style="list-style-type: none"> Coastal River Cities Cities with special Water needs Cities under special climate constraint 	Feasibility Study Impact	
Who should be involved	Economists, GIS specialists, Geologists, Meteorologist/Climatologist, Local Governments, Environmental engineers, Planners, Geographers		
Duration	Undergraduate 6 weeks minimum 3 field visits	Postgraduate 7 weeks minimum: Project – 3 weeks, Field visits - 3	

Essential Module “Theories and Concepts of Climate Change and Cities”

Ms. Willi Faling (University of Pretoria) outlined the **Essential Module “Theories and Concepts of Climate Change and Cities”**. Kemal, Hartmut, Antonella, Elisabeth and Willi had been members of this team, discussing title, core objectives and key terms in a sound manner.

They drafted their input for the relevant Terms of Reference as follows:

OBJECTIVES:

- ❖ To frame shared concepts and theories used throughout the cities and climate change course

- ❖ To become familiar with key concepts for climate change

LEARNING OUTCOMES:

At the end of this module, students should:

- Be familiar / explain current concepts in climate change
- Develop a shared understanding of current concepts
- Be able to investigate how key concepts are being applied in plans and policies for urban development
- Be able to recognise the complexity of cities and climate change

KEYWORDS:

- City – solution or problem?
- Vulnerability, Exposure, Sensitivity
- Risk
- Risk Management
- Resilience
- Impacts
- Uncertainty
- Mitigation
- Adaptation
- Scenario
- Equity, Justice, Ethics
- Climate Change
- Complexity, (regional/within cities themselves)
- Urban Systems, Coupled Socio-cultural-ecological Systems
- Social Capacity
- Scenarios and/or vs Projections
- Urbanisation
- Global Warming & Greenhouse Gases
- Disasters
- Hazards

DELIVERY MODE

- **Lectures**
- **Studio project** – students read the adaptation and mitigation plans/development plan from cities in their region/set case studies and investigate how the concepts learned throughout the course are being applied/misapplied locally.
- **Seminar** – discussions based on group studies of current divergent concepts and definitions to come up with definitions applicable to cities within the trajectory of current climate change scenarios.
- **Post-Grad** – simulation session /role play setting “opposing” stakeholders to debate a current sensitive case study. Hint: stakeholder should be asked to exchange their traditional roles for the debate.

CASE STUDIES

Case Studies are needed for comparative analysis of cities in: different regions (developing vs developed; geographical locations), different scenarios (climate regimes), different locations (coastal vs inland), different scales (megacities vs small island states).

- the same case studies can be carried across all the modules and investigated over various specialised aspects/sub-topics.

Module “Urban Energy and Climate Change”

Results of the working group on the **Module “Urban Energy and Climate Change”**, which was composed of Asad, Stelios, Guillermo, Ji Xi and Thomas, were shared in plenary by Dr. Asad Mohammed (University of the West Indies).

LEARNING OBJECTIVES:

- Undergraduate and Graduate
 - Linkage between urban structure and function and energy utilization
 - Adaptation and mitigation in urban energy systems
 - Understanding the urban energy planning process
- Additional graduate requirements
- Assessment methods and indicators

KEY CONTENTS:

- Lectures
 - Science of urban energy and climate change (adaptation and mitigation)
 - Sustainable energy
 - energy saving
 - energy efficiency
 - renewable energy
- Seminars
 - Energy planning for climate change
 - inventory and assessment
 - modeling and prediction
 - mitigation measures (urban form, density, land use, building and transportation)
 - Economic Assessment

CASE STUDIES:

- Curitiba
- Australian cities
- Beijing
- Freiburg

WHO ELSE SHOULD BE INVOLVED:

- Urban planning (energy and transportation)
- Energy modelling
- Energy economics
- Energy efficiency design

Module “Climate Change and Shelter & Housing”

A Master’s module of 15 weeks’ duration was outlined by the working group on the topic “Climate Change and Shelter & Housing”. Prof. Nouredine Zemmouri (University of Biskra) presented the results of his team elaborated by Professors Alphonse Kyessi, Cheikh Sarr, and himself.

LEARNING OBJECTIVES:

1-To understand the conditions of the built environment

- Climate
- Location
- Soil type
- Weather conditions

2-To understand social, cultural and economic conditions of people

3-To acquire knowledge on typologies

- Materials
- Configuration and Form
- Structure
- Size and Shape etc.

4-To have knowledge on Policy Legislation and Building Codes

CONTENT OF THE COURSE

- 1 Definition of Housing
- 2 Housing Vulnerability and Climate type
- 3 Climate Change Housing Construction and Upgrading
- 4 Climate Change Housing Configuration and Form
- 5 Climate Change Housing Management and Reconstruction
- 6 Climate Change Housing Services
- 7 Climate change and public policy

DELIVERY MODE

- Lectures: Theory and Practice
- Seminars: Topic discussion
- Studio: Design, Simulations, Mapping and Testing

CASE STUDIES

- Document Cases
- Examples from different countries

DEPARTMENTS TO INVOLVE

- Architecture
- Planning
- Sociology
- Geography
- Environmental Engineering
- Building Science

Module “Planning for Climate Change”

Lively discussions were also observed in the working group focusing on the module **“Planning for Climate Change”**. Prof. Mosha, Marielos A. Marin, Dr. Kumelachew Yeshitela and Prof. Barbara Norman drafted the module’s Terms of Reference for both undergraduate and postgraduate levels and shared them with the workshop participants during Barbara’s presentation.

I TITLE “PLANNING FOR CLIMATE CHANGE” / UNDERGRADUATE Mainstreaming Climate Change into the planning process

Learning objectives:

1. To understand the broad policy context of climate change and the planning process.
2. To understand how climate change considerations can be mainstreamed in strategic planning and urban design.
3. To understand how climate change considerations can be mainstreamed into urban and regional planning at the national, state/provincial, regional, and local level.
4. To gain skills in applying a range of tools for implementing planning for climate change.

Key content of the module:

1. Introduction.
2. Planning for Climate Change/International to Local Planning Policy.
3. Strategic Planning, Statutory Planning/Urban Design- Mainstreaming Climate Change.
4. Integration of Climate Change into Budgets.
5. Tools for implementation.
6. Climate Proofing Projects.
7. Community Participation

Key ideas for student-led learning:

1. Seminars.
2. Scenario Planning.
3. Gaming.
4. Field work: Neighbourhood Design.

Case studies needed:

1. Live projects to their situation for the projected climate change impacts: drought, flood, cyclones, extreme weather, etc.

Who else should be involved:

Environmental Economics, Urban Economics, Finance, Project Planning, Urban Sociology, Climate/Environmental Science.

II TITLE “PLANNING FOR CLIMATE CHANGE” / POSTGRADUATE

Learning objectives:

1. To understand the broad policy context of climate change and the planning process.
2. To understand how climate change considerations can be mainstreamed to strategic planning, urban design.
3. To understand how climate change considerations can be mainstreamed into urban and regional planning at the national, state/provincial, regional, and local level.
4. To gain skills in applying a range of tools for implementing planning for climate change.
5. To gain skills in complex problems solving and policy formulation.

Target learners:

Undergraduate from a wide range of disciplines: economics, engineers, environmental sciences, planning, architecture, law, sociology, etc.

Duration:

1,5 - 2 years minimum

Key content of the course:

1. Foundations of the Impacts of Climate Change.
2. Vulnerability and Planning for Climate Change/International to Local Planning Policy.
3. Strategic Planning, Statutory Planning/Urban Design- Mainstreaming Climate Change.
4. Risk Assessment.
5. Integration of Climate Change into Budgets.
6. Tools for implementation. (e.g. Strategic Environmental Assessment, infrastructure life cycle analysis)
7. Climate Proofing Projects/More complex projects.
8. Stakeholder Engagement - Business, Government and Communities.
9. Monitoring and Evaluation.

Key ideas for student-led learning:

1. Seminars.
2. Guest speakers.
3. Scenario Planning.
4. Gaming.
5. Field work: Neighbourhood Design.

Case studies needed:

1. Live projects to their situation for the projected climate change impacts: drought, flood, cyclones, extreme weather, etc.
2. Integrating climate change into EIAs for significant projects. (e.g.: Infrastructure projects).

Who else should be involved?

- Environmental Economics, Urban Economics, Finance, Project Planning, Urban Sociology, Climate/Environmental Science.
- Community Leaders from Local Governments.
- Business, Chamber of Commerce.
- NGOs.

Essential Module “Practice of Urban Climate Change Adaptation and Mitigation”

The team composed by Edsel Sajor, Prof. Mahanama, A.S.M. Saifullah, Samuel Yonkeu and Amino Naran was the one to wrap-up this session with its presentation on the essential module “Practice of Urban Climate Change Adaptation and Mitigation”. It outlined the module for the duration of a total 60 hours on both graduate as well as postgraduate levels, shaping learning objectives, key content, key ideas for student-led learning and case studies as follows:

LEARNING OBJECTIVES

Graduate

Students should be able to

- develop capacities for climate change adaptation and mitigation
- Understand issues related to climate change impact in cities
- Conceptualize the basic climate change adaptation and mitigation
- Illustrate these concepts through the use of good practices in cities
- understand the basic concepts of mitigation and adaptation

Postgraduate

Students should be able to

- develop adaptation and mitigation approaches for climate change resilient cities
- Review adaptation and mitigation actions
- Integrate the mitigation and adaptation action into planning
- acquire a more nuanced understanding of different types of mitigation and adaptation including complementary and contradictions

KEY CONTENT

Graduate

- Concepts of adaptation and mitigation
- Climate Change impact and disaster risk
- Mitigation VS adaptation for CC
- Climate Change induced hazards and risks

Postgraduate

- Methods and tools used
- Adaptation and mitigation measures
- Sustainable recovery and climate change adaptation and mitigation
- Assessing risk and adaptation to risks
- Conceptual framework to understand adaptation and mitigation
- Institutional change and Social Change

KEY IDEAS FOR STUDENT-LED LEARNING

Graduate

- Lecture
- Studio
- Workshop
- Practical work

Postgraduate

- Seminar
- Studio
- Group Project

CASE STUDIES

- Case studies on coastal cities on local and regional level in climate change adaptation and mitigation
- Case studies in selected cities on the addressed issues
- Experiences from Climate resilient cities in different countries

TARGET LEARNERS

- POSTGRADUATE
- Planners, Land developers, Local Government officials, Architects , Disaster management officials, Engineers

WHO SHOULD BE INVOLVED

Environmentalists, Geographers, Sociologists

Session 4: Partnerships and road map for the CCCA

In Session 4 the working group break-out sessions were consolidated, key agreements of the previous sessions 1 to 3 summarized to ensure common understanding and to facilitate partnerships for the development of the modules to be developed. The session was concluded by agreeing on the road map for the Cities and Climate Change Academy. The Session was facilitated by **Dr. David Dodman** (IIED).⁵

- Based on the work done during the workshop, Bernhard Barth (UN Habitat) outlined how partnerships for module development could work. He further presented how the session modules could be developed through multi-university partnerships. He stressed again that the partnerships would help to ensure that the generic modules took account of the local and regional specificities, in terms of climate change impacts and urban development as well as urban educational needs. It was expected that experts with significant knowledge would come together for module development. Support for the module development would therefore be for coordination and module design and not for new research.
- However the Cities and Climate Change Academy would encourage research and facilitate the publication of such research in peer-reviewed journals.
- A steering committee was to be set up to support the process of developing and testing the modules. This would comprise of the workshop co-organizers as well as volunteers from among the participants.
- The first step would be drafting the report of the this meeting as well as the draft Terms of Reference which would then be issued by a call for proposals by the end of July. The contribution of the workshop participants would be very strongly invited; however the call would be open to anyone with the right expertise.
- Ideally initial module concepts are in place by October / November 2011. This would allow their initial testing at the Latin American Cities and Climate Change Workshop to be held then.
- Full drafts of the modules should be in place by early 2012 for testing no later than June 2012 in the framework of a block seminar in at least one of the involved universities.
- Mr. Barth stressed again that during this phase the six modules agreed upon should be designed as a one-week unit of a (12 to 15 week) semester course. However, given the depths that the working groups would like to bring out, a second module (one additional week) could be developed and resources could also be provided to expand the module to a block seminar.

After discussing and agreeing on the next steps, the meeting also discussed how best to engage within the ICLEI Resilient Cities Congress. The participants introduced the sessions they would be involved in (as chairs or speakers) and it was discussed how to collectively make most of the event and feeding back into the Cities and Climate Change Congress. To this effect the group agreed to meet two days later during the Resilient Cities Congress to introduce the Cities and Climate Change Academy to the Executive Director of UN-HABITAT, Dr. Joan Clos and the Vice Rector of the United Nations University and Director of its Institute for Environment and Human Security as well as to University participants of the ICLEI congress who could not join the workshop. This meeting was held as planned on 4 June 2011 and discussed outstanding issues and discussed the relevance of the Resilient Cities Congress for the Cities and Climate Change Academy.⁶

⁵ A summary of the workshop outcomes is provided in Section D of this report. The summary of session 4 therefore highlights primarily the process.

⁶ See Annex 5 for the outcome of this meeting.

D. Outcomes

The workshop agreed on how to advance the Cities and Climate Change Academy. Specifically the following were agreed: (1) Thematic Priorities, (2) generic module design, (3) module content, (4) partnership arrangements and (5) roadmap.

1. Thematic Priorities

It was agreed that in the first round six modules would be developed. Basic information on an additional (o) Introductory Module would be provided by UN-HABITAT. The following modules (i.-vi.) are to be developed in the first round of module elaboration by selected university consortia:

- o. Introduction to Climate Science for Urban education
- i. Essential module: "Theory and Concepts of Climate Change and Cities"
- ii. Essential module: "Practice of Urban Climate Change Adaptation and Mitigation"
- iii. Module: "Planning for Climate Change"
- iv. Module: "Climate Change and Urban Water Cycle Management (incl. Sanitation)"
- v. Module: "Climate Change and Urban Energy (including Urban Transport)"
- vi. Module: "Climate Change and Shelter/Housing"

2. Generic Module Design

The workshop agreed on the generic structure for the modules. This framework would guide the module developers and ensure homogeneity across the modules.

3. Module Content

In working groups (see Session 3c above) recommendations for the development of the Terms of Reference (in conjunction with the updated "Rotterdam Matrix") will serve as guidelines for the module development. Given that some working groups also elaborated semester courses (going beyond the approach of only developing one or two week modules of a semester course) the ToR will be adjusted accordingly. The outline developed will also ensure that modules are not overlapping.

Once finalized the modules would be available on UN-HABITAT's internet platform, "Urban Gateway". The modules would be accessible by all university lecturers with an interest in Climate Change education. The only condition for module use would be the commitment by the users to upload their adaptation and own case studies to further develop the Cities and Climate Change Academy.

4. Partnership Arrangements

The modules are to be developed by at least three universities or partnerships of individuals from diverse institutions. The diversity in the partners should reflect varying climatic zones, different urban development challenges as well as different challenges to urban education. The partnership is to ensure that (1) the module presents the state of the art in urban climate change knowledge and urban education and (2) provides enough specificity (in terms of case studies for example).

A steering committee was to be set up to support the process of developing and testing the modules. The steering committee would also facilitate communication between the various developers and would ensure that regional inputs are provided. To date the committee consists of representatives of the workshop co-organizers: UN-HABITAT, CLUVA,

UNU (UNU-EHS), IIED. Prof. Mosha (University of Botswana) also volunteered.

UN-HABITAT and the United Nations University and UN-HABITAT and CLUVA are committed to institutionalizing their partnership by developing Memoranda of Understanding.

5. Roadmap

Timeline	Activity	Partnership
July/August 2011	Finalization of Workshop Report	Workshop Co-organizers
July/August 2011	Finalization and dissemination of Call for Proposals (support to building representative partnerships)	UN-HABITAT with Steering Committee
End September 2011	Deadline for submission of proposals and selection of module development consortia	Steering Committee
October 2011 – March 2012	Module Development by development consortia, supported by regional communities of practice and the Steering Committee	Selected consortia Steering Committee
November 2011	Latin American Regional Workshop	UN-HABITAT with Steering Committee and representatives of consortia
March – April 2012	Peer Review	Steering Committee and wider Cities and Climate Change Community
May – June 2012	Testing and finalization	One or two selected universities
July 2012 onwards	Rollout including the limited support of individual universities and capacity building of lecturers.	
Second half of 2012	Review of process and results, launch of new round of module development	

"O-tones": Participants' feedback on the workshop



We all, I believe, have worked well together. I will add to the list of my preferred contacts new people which I may not have met without the Bonn conference. My participation was a success in that way.

Ich fand den UN-HABITAT Workshop übrigens sehr gelungen - ist ja keine einfache Aufgabe, Akademiker aus verschiedenen Kulturkreisen zum gemeinsamen produktiven Arbeiten zu bewegen!

I was also very happy about the cooperation during both events. Thanks very much, for all what you did to make these events fruitful for us. Thanks also to all the colleagues that I had the opportunity to meet and exchange with during these days!

Annexes

Annex 1: Workshop Programme

Day 1, Wednesday, 1 June 2011	
Opening and Introductions	
Time	Activity
08.30-09.00	Arrival and registration
09.00-10.00	Opening of and introduction to the workshop and the Cities and Climate Initiative. Bernhard Barth, UN-HABITAT Remarks: Sandra Fohlmeister, CLUVA, Vilma Hossini, UNU-EHS, David Dodman, IIED Participants' self-introduction
10.00-10.30	Coffee / Tea Break
Session 1: Taking stock of Urban Climate Change Education	
Time	Activity
10.30-11.45	Current practices – current gaps Moderator: Vilma Hossini, UNU-EHS <ul style="list-style-type: none"> Prof. Elisabeth M. Hamin, University of Massachusetts: Climate Change pedagogy in Planning Education, an overview Prof A. C. Mosha, University of Botswana: Mainstreaming Climate Change into Urban Education at the University of Botswana Dr. Edsel Sajor, Asian Institute of Technology. Urban Climate Change Education at the AIT Prof. Marielos Marin example from El Salvador Discussion
11.45-12.45	CLUVA – Gap analysis – starting point for capacity building Moderator and introduction: Sandra Fohlmeister, TUM Presentations: <ul style="list-style-type: none"> Prof Kumelachew Y. Habtemariam, Addis Ababa, Ethiopia Prof. Samuel Yonkeu, Ouagadougou, Burkina Faso Prof. Thomas Tamo Tatietse, Yaoundé, Cameroon Prof. Alphonse G. Kyessi, Ardhi, Dar es Salaam Prof. Cheikh Sarr, Gaston Berger, St. Louis Discussion
12.45-13.45	Lunch Break

Annex 1: Workshop Programme (2/3)

Session 2: Developing Priorities for the CCCA	
Time	Activity
13.45-14.30	<p>The Cities and Climate Change Academy – Initial lessons from Asia and Africa Moderator: Dr. David Dodman, IIED</p> <ul style="list-style-type: none"> Prof. P.K.S. Mahanama, University of Moratuwa: CCCA in Asia – Workshop and follow-up. Ms. Willi Faling: University of Pretoria: CCCA in Africa – Workshop and follow-up. <p>Discussion</p>
14.30-17.00	<p>Working Groups (recap and introduction):</p> <ul style="list-style-type: none"> Review of the “Rotterdam Matrix” Taking stock of on-going education programmes, tools (and other documents) and case studies Design of modules
15.30-16.00	Working Coffee / Tea
17.00-17.30	Presentation and Discussion

Annex 1: Workshop Programme (3/3)

Day 2, Thursday, 2 June 2011	
Session 3: Developing module content	
Time	Activity
08.45-10.00	Existing curricula, syllabi, tools partners can “contribute” Bernhard Barth <ul style="list-style-type: none"> Mr. Stelios Grafakos, IHS, climate change decision making tools Dr. David Dodman, IIED, comprehensive Cities and Climate Change curriculum, UCL, Teaching Resources, environment and Urbanization. Dr. Rosemary Awuor Hayangah, University of Kwa Zulu Natal Dr. JiXi, Peking University Ms. Antonella Vasallo, International Oceans Institute Presentation and Discussion
10.00-11.30	Moderator: Bernhard Barth Working groups: <ul style="list-style-type: none"> focussing on each of the identified modules and based on the generic framework developed Develop an outline of terms of reference
11.00-11.30	Coffee / Tea Break
11.30-12.30	Group presentation and agreeing on the framework of module development
12.30-14.00	Lunch Break
Session 4: Partnerships and road map for CCCA	
14.00-15.30	Moderator David Dodman. Recap Way forward, resource implication Time horizon Dynamic process of the CCCA Steering committee Universities at ICLEI (meeting on Saturday)
15.30-16.00	Coffee / Tea Break
16.00	Closing

Annex 2: List of Participants

no	Name / contact details	no	Name / contact details
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Annex 2: List of Participants (2/4)

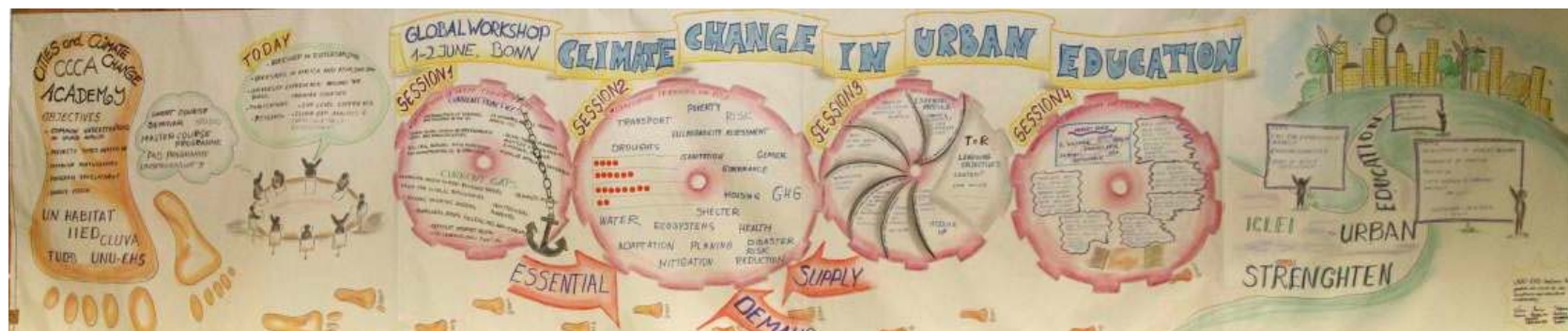
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Annex 4: "Rotterdam Matrix": on-going education Programmes, tools, case studies (updated version 02.06.2011)

Board 1 / Cluster 1 (1/1)

Unit/Theme	Who, What, How	Interested in Module Development	Priority Case Studies	Essential Reading
Climate Justice (focus: inequity, poverty and climate change inter-regional inequity)	UNTAR (Jakarta)	<ul style="list-style-type: none"> - UNTAR (Kemal (Taruc) - IOI (AV) - UKZN 	<ul style="list-style-type: none"> - Migration - New Town Dev't /Private Sector Dev't - Slum Upgrading/Hording / SLA Level (??) - Kenya, Nicaragua coastal cities 	<ul style="list-style-type: none"> - UNU Publications - Dodman + Satterthweite - Brankrell et al - Moser + Satterthweite - UK Gov't publications - UNDP series; sharing innovative experience (South-South)
Climate Change and Gender	IDS (Sussex) AIT	<ul style="list-style-type: none"> - IOI (AV) - Gender & Development Studies (AIT) 	"Women, youth and the sea Programme" (IOI – IO case studies)	<ul style="list-style-type: none"> - UNDP's publication - UNDP's report on Gender and climate change - Denetriades (??) - Geraldine Terry - [children – S. Bartlett]
Climate Change and (urban) Health	<ul style="list-style-type: none"> - Canberra (UC, ANU) - LSHTM - National Institute of Public Health (Algeria) 	<ul style="list-style-type: none"> - UC (Barbara Norman) - Nadjat AROUA - Management and Computer Sciences High Institute Ouagadougou, Samuel Yonkeu - IOI (AV) 	Algeria	WHO report on "Healthy cities"
Climate Change and Food Security	<ul style="list-style-type: none"> - Natural Resource Institute - Univ. of Mozambique - Univ. Tanzania - UKZN (Institute on Food Security) 	<ul style="list-style-type: none"> - Management and Computer Sciences High Institute and University of Ouagadougou, Samuel Yonkeu - UKZN - UNU-EHS 	IOI – Case studies in UNOPSS publication	<ul style="list-style-type: none"> - FAO - WFP Report on Indonesia food security mapping

Board 2 / Cluster 2 (1/2)

Unit/Theme	Who, What, How	Interested in Module Development	Priority Case Studies	Essential Reading
Introductory session on climate change (setting the scene, basic climate science, emissions, climate models, vulnerabilities)			Durban, SA	IPCC (WGI, SPM, WG II) Satterthwaite et al, IIED Cosust Journal special issue (Dodman et.al.)
Climate change and Adaptation and Mitigation planning	<p>Department of Urban + Regional Planning University of Botswana</p> <p>University of Pretoria Introduction to Climate Change and Planning</p> <p>IHS Rotterdam LCC Action plans</p> <p>UNITED NATIONS UNIVERSITY INSTITUTE FOR ENVIRONMENT AND HUMAN SECURITY (UNU-EHS), VARMAP</p>	<p>H.Fuenfgeld/RMIT Royal Melbourne Institute of Technology</p> <p>UCA El Salvador (Marielos A. Marin)</p> <p>University of Botswana</p> <p>E.Hamin/University Massachusetts; Willi Faling (UP) IOI-AV (esp. coastal)</p> <p>UNITED NATIONS UNIVERSITY INSTITUTE FOR ENVIRONMENT AND HUMAN SECURITY (UNU-EHS)</p>	<p>Indonesian cities (GIZ)</p> <p>South Africa climate change Mitigation 3-cities</p> <p>Coastal Cities</p> <p>Australia (Barbara Norman) Scenario planning, climate – urban futures (UC+ANU Conference)</p>	<p>New UN Global Cities Report</p> <p>WB Primer on Cities + Climate Change</p> <p>Planning for Climate Change A-Tool, UN Habitat</p> <p>CURF www.curf.um.au</p>
Climate change and Urban Ecosystems/biodiversity	<p>Chair of Ecosystem planning and management Addis Ababa University</p> <p>Environmental Science University of Kwazulu Natal, South Africa Cluva</p>	<p>ElABC-AAU (Kumelachew Yeshitela); University of Kwazulu Natal(Planning); CLUVA WP 2.2 TUM&Manchester University; Department of Urban Regional Planning, JNAFAU Hyderabad - India UNU-EHS, EVES, PEDDR</p>	<p>Cities participating in ICLEI Lab programme</p> <p>Case studies from CLUVA, partners ready in 2013;</p> <p>Pedestrianisation in Hyderabad Jnafau,</p>	<p>Gill (Green Infrastructure); Justus Kithia (paper on Manbese + Dar)</p> <p>USAID Workshop Proceedings 2000/1 Hyderabad, India</p>

	Work package 2.2 TUM+Manchester University United Nations University Institute for Environment and Human Security (UNU- EHS), EVES, PEDDR		HYP+TU Berlin	
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Board 2 / Cluster 2 (2/2)

Unit/Theme	Who, What, How	Interested in Module Development	Priority Case Studies	Essential Reading
Climate Change and Land Use Planning	University of Botswana Planning Department School of planning and Architecture, Jnafau Hyderabad, India	E. Hamin, University Massachusetts UNIU Botswana UKZN UC+ANU (Barbara Norman)	Bachelors and Masters Research projects, School of Planning &Architecture, JNAFA University, Hyderabad, India	Report on Climate Change and Health Impacts
Climate Change and Shelter/Housing/Building /Construction	School of Architecture, Planning & Human Settlements and housing UKZN Karlsruhe Institute of Technology, sustainable constructions Rafael Pizarro, Berlin	UCA El Salvador (Marielos A. Marin); Jnafa University Hyderabad, India University of Kwazulu Natal, South Africa	Research projects: ALTAVISTA; ARGOZ/El Salvador TU Darmstadt (HCMC-SAIGON)	Green building regulations LEED IGBC "GERMAN" "British" Japanese Dodman et.al.: Shelter in Philippines
NEW: Climate Change & Economic development	University St. Guyana/ Blue Space Paulette Bynon			
NEW: Climate Change & Drought	University of Yaounde	School of Engineering	Cities of North Region in Cameroon	
NEW: Climate Change & Urban planning /Urban design	Chair of Urban planning, Chair of Urban design Addis Ababa University KIT (University) Urban design	University of Kwazulu Natal, South Africa University of Botswana	Fast growing peripheries of megacities (Hyderabad, Jakarta)	

Board 3 / Cluster 3 (1/2)

Unit/Theme	Who, What, How	Interested in Module Development		Priority Case Studies	Essential Reading
Climate Change and Water and Sanitation	Water related issues (resources or risk) Hydro-climatic risk (HCR) Urban vulnerability to HCR Water urban sensitive design	Polytechnic School of Architecture and Urban Planning of Algiers University of Science and Technology, Mongolia. Environmental Engineering Department University of Guyana University of Amsterdam	Altantul Kyessi Thomas Tamo Tatietse Nadjat Aroua	Lake Victoria, Katmandu, Port Vila Boston Climb Report Algiers (al-Hanash River) Wetland, Vally, Wargla (southern Algeria) Others	Unesco: Urban Water Resource Management; Ardhi University: Measuring Service Delivery in Southern Africa; Chapter 5- Climate Change in Cities
Climate Change and Disaster Risk Reduction	University of Pretoria, Lecture on climate change and DRR in the context of spatial Planning and Land-use Management(and research) UNU-EHS, PhD Block course DRR and Vulnerability UCA El Salvador: Risk Management Post Graduate Degree	University of Pretoria, Lecture on climate change and DRR in the context of spatial Planning and Land-use Management(and research) UNU-EHS, PhD Block course DRR and Vulnerability UCA El Salvador: Risk Management Post Graduate Degree	International Ocean Institute Willi Faling Guillermo A (UCA El Salvador) Samuel Yonkeu (University Ouagadougou)	Maputo Durban eThekweni, Cape Town, Western Cape Province Ardhi University: Case study Bondela – Climate Change and Flooding	CCCA Africa, Hyogo Protocol, Vancouver Convention, UNISDR, WSUD approach, World Bank, IPCC, B. Wisner, M. Pelling (case studies on Africa), IFRC, Alnap, Oliver Smith, J Mercer. Ardhi University, Climate Change and Flooding, Bonde la Mpunag (Ardhi University)
Climate Change and transport planning	Urban Energy, UWI, UG, S. Surinam (joint course on urban Energy-including Transport)	Prof. Zhang S.Q. Peking University	Blue space	GRHS 2013, Hyderabad (Humboldt University on Transport Planning)	GRHS 2013, Chapter 6: Climate change in Cities (ARC3)

Board 3 / Cluster 3 (2/2)

Unit/Theme	Who, What, How	Interested in Module Development		Priority Case Studies	Essential Reading
Climate Change and Solid Waste Management	Ardhi University M-DRM M-DRM & Engineering	University of Yaounde, School of Engineering (Water and Sanitation, Energy and Transport Planning)	TT Tatietsé and University of Ouagadougou	UNEP DTIE	
Climate Change and Urban Energy	Possibly as it links to urban systems and resilience and links to other issues (needs to be done first)	UCA: Post graduate degree in energy efficiency in buildings IHS post graduate and short courses University of Biskra, Department of Architecture (renewable Energy Integration)	Guillermo A. H Fuenfgeld IHS N. Zemmouri UKZN (Planning)	Kinesis report Capital Australian Cities Yaounde and Douala Cameroon Optimization Urban configuration Mitigation	Bioclimatic Architecture, Various Readings Vernacular Human Settlement Various Readings
NEW: Coastal Zone Management		UWI – Coastal Zone UG, UVA coastal protection works	UKZN IOI (AV)	Arcadis-St Louis Guyana, Suriname, Netherlands, Asad Coastal Cities Australia (Uni Canberra) UN-HABITAT Sorsogon City	
NEW: Climate Change and Flood Management		AIT			

Board 4 / Cluster 4 (1/4)

Unit/Theme	Who, What, How	Interested in Module Development	Priority Case Studies	Essential Reading
Climate Change and Urban Vulnerability Assessments	<ul style="list-style-type: none"> - University of Ouagadougou, Management and Computer sciences High Institute: 1. Main environmental problem and Impact: climate change, Biodiversity 2. Risk analysis climate change - Univ. Gaston Berger, Dept. of géographie, sociologie, themes covered in courses: <ul style="list-style-type: none"> • Urban floods • Coastal erosion • Humidity destroying cultural monuments • Desertification • Poverty, Begging and the enlargement of suburbs • Insolvency (failing social services degrading environment) 	<ul style="list-style-type: none"> - Willi Faling (perception of vulnerability & risk) - CLUVA project, WP 2 / esp. UFZ Leipzig - Prof. Manahama SC - University of Ouagadougou, Department of geography; Management and computer sciences high institute, Department of Business school - UNU-EHS, Vulnerability assessment, risk - Eduardo Mondlane University, INGC - UKZN (SA) - IOI: specifically on coastal cities + special challenges - AIT, Urban Env. Management, FOS - MBSTU : Bangladesh Urban Environmental Planning 	<ul style="list-style-type: none"> - Batticola city – SL, Negombo city – SL; Sorsogon city-Philippines - ACCCRN case studies (Rockefeller foundation) - South East Asia, Adaptation Res. Study (ISET); VA Vietnam; Case study on urban flooding in Dakar & St. Louis by the universities of Dakar & St. Louis; MA & PHD theses - Climate change induced Flood Vulnerability Assessment of Angono city – UP, SURP - VA and hazard mapping of flooding in Gaibandha municipality - CLUVA case studies available end 2012 - Participatory VA of flooding coastal cities 	<ul style="list-style-type: none"> - Management and computer sciences high institute, University of Ouagadougou, Master thesis in impact of inundation in Ouagadougou city - Master thesis /Pelling Wismer, A.Fekete, M.Dauu; J. Birkmann, area Cologne, VA on Infrastructure, Flood, Droughts - “L’insolubilité à St. Louis”/“insolvency in St. Louis”; - “L’insolubilité à Rufisque”, by Amadou - IPCC reports, ICLEI; UNHABITAT; IIED

	<ul style="list-style-type: none"> -IOI: coastal cities + special challenges - Faculty of Architecture University of Moratuwa-SL - Sorsogon City – UNHABITAT - IPCC - UNU-EHS Block course MsC; PhD on Vulnerability assessment related to hazard - AIT, School of Environment, Resources & Dev., Urban Environmental Management FOS - SEI - ITC: incl. GIS Twente University - MBSTU: Bangladesh, Dept. of ESRM, ASM Saifullah - Prof. Jin Beijing Normal University / households Survey, Dr.Y.q. Shen Zhejiang Agriculture and Forestry University - Eduardo Mondlane Univ.: Physics Dept., Dept. of Geography, INGC 			
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Board 4 / Cluster 4 (3/4)

Urban greenhouse gas assessments	<ul style="list-style-type: none"> -University Gaston Berger, Dept. of Geography, module: Environment -Eduardo Mondlane University: Physics Dept.; Geography Dept.; MICOA -ICLEI CCP -AIT, School of Env., Resources & Dev.; -S. Energy Management EOS-UEM field of Study -IHS -Tyndall Centre (UK) -G.Q.Chen and Ji Xi in Peking University; I-O analysis modelling 	<ul style="list-style-type: none"> - International ocean mov, esp. wrt. Coastal cities + spec. challenges - MBSTU: Bangladesh, Urban Environmental planning - University of Ouagadougou, Management of computer sciences high institute - UoM Manahama SL 		<ul style="list-style-type: none"> - E+U Papers: Dodman; Hoornweg et al
Climate Change governance (local, national + international decision-making)	<ul style="list-style-type: none"> - RMIT University + Victorian Centre for Climate Change adaptation Research (VCCCAR) - University of the West Indies, John Agard Natural Science - UoM Manahama SL - SEI (Stockholm Environment Institute) - AIT, School of Env., Resources & Dev.; 	<ul style="list-style-type: none"> - RMIT University – climate change adaptation Programme > local governance - AIT, Urban env. Management, FOS - UKZN (SA) - University Gaston Berger, Senegal - IHS, Rotterdam in decision support making - UCA El Salvador (Marielos A. Marin) - IOI - University of Youndé 	<ul style="list-style-type: none"> - Ministry of Env. > Sri Lanka, National Policy and Strategy - eThekweni Municipality - City of London - City of Melbourne 	<ul style="list-style-type: none"> - Joan Carmin; - Harriet Bulkeley - B. Wisner - Fuenfgeld + McEvoy ; Framing climate change adaptation

	<p>Urban Environmental Management FOS</p> <ul style="list-style-type: none"> - IHS (Erasmus Uni Rotterdam) - Prof Wang XL Carbon Finance; Prof. SQ Zhang, Carbon Tax Peking university - IOI: esp. wrt to coast / oceans and repercussions - Faculty of Architecture University of Moratuwa SL - Sorsogan City (??) – UNHABITAT - IPCC - M.B. Science & Tech. Univ. (MBSTV) Bangladesh Dept. of Environmental science and resource mgt. - Uni Yaoundé Planning of urban vuln. 			
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Annex 5: Participants' ideas and suggestions for ICLEI 2012

Strengthening Urban Climate Education Debriefing on CCCA pre-event

- Specify case studies in Tor (not just little boxes but thorough documents)
- Language of Modules (French?)
- Feedback loops during testing phase (test before upload)
- Patchwork system
- Utilize case studies from the reality check examples of ICLEI congress
- Reflections on ICLEI Congress - can it enrich the modules
- Who will check the modules
- Q: Are ToTs possible? A: the first phase would focus on the universities; additional courses later would be possible
- LAC workshop could be utilized for discussing adapting modules
- UNU maybe setting up a full MSc Programme on Cities and Climate Change
- Module on communication of Climate Change

Reflection on ICLEI congress

- Provision of resources for teaching – Real examples
- Suggestion integration of MF into Congress
- Unique combination of local government officials and research as well as cities
- Lots of presentations on research – no stream on pedagogy and Capacity Development
- Work with local governments as part of modules
- Challenge of communication between research and political decision makers
“language problem” should be tackled during congress
- Congress gives lots of inspiration for new research
- Many cases presentations give no answers to developing countries
- Good: Financial perspective of climate change
- Cross-cutting themes concerning climate change adaptation process
- Huge amount of information (and multiple perspectives)
- Still unresolved discussion on mainstreaming Adaptation or Adaptation as stand alone action
- Peru – training with mixed target groups as strategy (beneficial for municipalities)
- ICLEI: deficient interaction
- Long distance course?
- Diploma failed (target group young people)
- Peer review more efficient (open space for Q+A)

Annex 6: Expressions of interest in module elaboration

Upon the prioritization and definition of six core modules, workshop participants expressed their interest in jointly elaborating the modules as follows:

MODULE :
Partners + Volunteers

Theory + Concepts of Climate Change + Cities

1. Antuella Vassallo
2. Hartmut Frenzel
3. KEMAL TARUC
4. Elisabeth
5. YONKEU Samuel
6. Willi Faling

Interested in Consortium

4. FUENFUEO - RMIT - C. HAMIN - U. MASS
Willi Faling (HP) - KEMAL TARUC - UNITAR
MARIELOS A. MARIN
BARBARA NORMAN

MODULE :
Partners + Volunteers

Praxis of CC Adaptation + Mitigation

1. Edsel Sajor
2. Mohanama Saifullah
3. YONKEU Samuel

Interested in Consortium

P.K.S. MAHANAMA • SAIFULLAH -
AMINO NARAN
EDSEL SAJOR
ALPHONCE KYESS
Stelios (HS)

MODULE :
Partners and Volunteers

PLANNING FOR CLIMATE CHANGE

1. BARBARA
2. MOSHA
3. Kumelachew
4. MARIELOS

Interested in Consortium

1. BARBARA NORMAN
2. Nikoiti Bolyev
3. Prof. ALOISIUS C. MOSHA
4. MARIELOS A. MARIN
5. Nadjet AROUA
6. CHEIKH SARR
7. Stelios (HS)

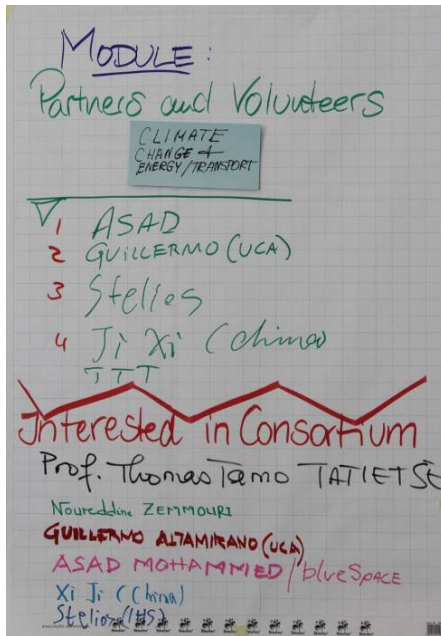
MODULE :
Partners and Volunteers

CLIMATE CHANGE & URBAN WATER CYCLE MANAGEMENT (incl. Sanitation)

1. Altantuil
2. Nadjet AROUA

Interested in Consortium

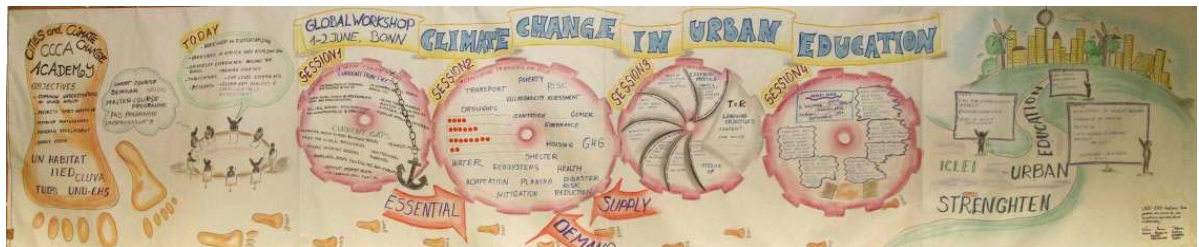
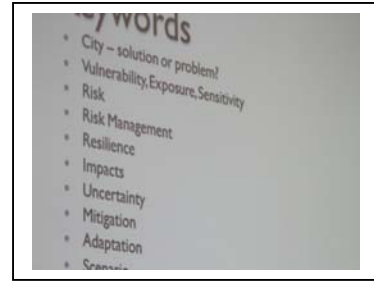
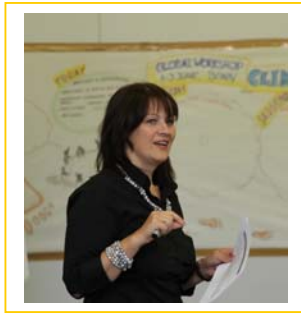
1. Altantuil
ASAD MOHAMMED/blueSpace
Prof. Thomas Tamo TATITSE
Dr. Rosemary Hayangeh



The Global CCCA Workshop in Bonn 01-02 June 2011 offered a platform to workshop participants to enter into partnerships for further exchange and cooperation. The resulting **Marketplace** (graphic facilitation provided by V. Hossini (UNU-EHS)) is an illustrative proof of the participants' strong interest to initialize a ***Community of Practice*** in Urban Climate Change Education, linking universities from the North and South.



Annex 7: Workshop impressions



Annex 8: Feedback from Working Group on

- Review of the "Rotterdam Matrix"
- Taking stock of on-going education programmes, tools (and other documents) and case studies
- Design of modules

The results of **Working Group 1** (Cluster 1) were outlined by Barbara Norman (University of Canberra) focusing on the Rotterdam Matrix' modules "Climate Change and Justice", "Climate Change and Gender", "Climate Change and Urban Health" and "Climate Change and Food Security".

The group identified the following key issues:

Under-graduate	Post-graduate
Learning outcomes	Learning outcomes (more depth)
Face-to-face contact (personal) → staff	research
Group-based problem-solving (overviews)	More individual responsibility, more flexibility (part-time / online)
Hands-on experiences	Problem-specific (complex) & innovative solutions (dissertation/thesis)
Field work	Case studies and debate
Systems-based foundation course	Scenario planning
Basic tools (e.g. stakeholder assessment/analysis)	Critical/reflective/generate feedback, solutions
Basic techniques, tools, methods	
Chatgroups, facebook	Guest lecturers (stakeholder involvement or feedback) → Skype (virtual lectures, new media)
Exam/exercise/assessments	Assessment on research, critical assessment, review
Evaluation/monitoring for review of module (internal)	Evaluation/monitoring for review of module (internal)
Guided reading units	Methodologies

As most relevant this working group ranked the modules "Climate Change and Urban Health" and "Climate Change and Food Security" on positions 1 and 2.

Prof. Mosha (University of Botswana) presented on behalf of **Working Group 2** (Cluster 2), more precisely the "Introduction session on Climate Change", "Climate Change and Adaptation and Mitigation Planning", "Climate Change and Urban Ecosystems / Biodiversity", "Climate Change and Land Use Planning" and "Climate Change and Shelter / Housing / Building Construction".

The working group identified the following aspects required for the elaboration of the modules:

Means of Delivery

- **Courses**
 - Objectives
 - Learning Outcomes
 - Contents of Module
 - Continuing education for practicing planners and others
 - Accreditation and licenses to practice
- **Delivery Mode**
 - Case Studies
 - Experiential / Community learning
 - Examinations / assessment Tools
 - Simulations / Scenarios / Gaming
 - Distance learning / Video Conferences
 - Teaching tools (IVote, Cell Phones, etc): Soft + Hardware and e-Blackboard.
 - Internships
 - Student and Staff Exchange.

Levels of teaching				
Unit/Theme	Undergraduate	Graduate		Continuing Education
		MSc	PhD	
Introductory Session on climate change (Setting the scene, Basic Climate Science, Emissions Climate Models, Vulnerabilities).	X	X		X
Climate Change and Adaptation and mitigation Planning	X		X	X
Climate Change and Urban Ecosystems/Biodiversity		X	X	X
Climate Change and Land Use Planning	X	X	X	X
Climate Change and Shelter / Housing / Building / construction	X	X	X	X
Climate Change & Economic Development		X	X	
Climate Change and Drought	X	X	X	X
Climate Change Urban Planning, and Urban Design	X	X	X	

Delivery Challenges were especially seen in: 1. Skills: Need for Re-skilling, 2. Infrastructure, 3. Equipment, 4. Funding, 5. Technology, 6. Governance, 7. Space, 8. Marketing, 9. Teaching Materials, 10. Interest + Will Power Ambitions / Passion, 11. Sustainability outcome, Staff & Students, and 12. Outcome.

Guillermo Altamirano (University of El Salvador) shared the results of **Working Group 3** (Cluster 3) with the plenary, dealing with the modules "Climate Change and Water and Sanitation", "Climate Change and Disaster Risk Reduction", "Climate Change and Transport Planning", "Climate Change and Solid Waste Management" and "Climate Change and Urban Energy". As most relevant module the group identified the one dealing with "Energy & Transport".

Items to be defined in the framework of module development elaborated by this working group were:

A – To cater for:

- Undergraduate
- Graduate
- Continued Professional Development

Duration and intensity

- Class hours
- Classes per week

B– Course overview; Objectives and Outcomes:

- Course overview
- Prerequisites knowledge
- Objectives and outcomes of course
- Assessment criteria
 - Online tests
 - Assignments

C– Course Outline and Content

- Topics and sub-objectives
- Case studies
 - on specific climate regions
- Key reading material
 - (limited) with varying degrees of complexity e.g. Bachelor vs. Master's degree

D– Delivery Mode

- Seminar
- Studio
- Lecture
 - PowerPoint presentation outlines
- Mixed-mode
- Additional communication and information
 - Virtual roundtable discussions/studios
 - Repository of documents and photographs
 - Videos, webcasts, etc.
- Must have Filters to 'contact us'
 - professor to professor
 - groups to groups
 - student to students
- Latest news and research findings
 - on specific climate regions

Edsel Sajor (AIT) summarized the **Working Group 4 results** (Cluster 4) related to modules "Climate Change and Vulnerability Assessments", "Climate Change and Greenhouse Gas Emissions" and "Climate Change and Governance", while clearly stating that the modules on Vulnerability Assessments and Governance seemed the most relevant to his group.

This working group put on its list as items to be defined in the framework of the modules' elaboration the following:

- 1) Title
- 2) Course level
- 3) Learning objectives
- 4) Target audience / career paths
- 5) Expected outcomes
- 6) Syllabus, including key readings, format/methodology and prerequisites
- 7) Duration and Credits
- 8) Assessment / grading
- 9) Involved disciplines and departments
- 10) Lecturers, teachers

Annex 9: Compilation of presentations