Assessment report

Lessons learnt from Climate Change Adaptation in Europe

B_RE_U_COM_
Building Resilient Urban Communities

Symposium held on August 28 – 29, 2019, including site visit on August 30, 2019 at Danube University Krems (DUK)

This event was held within the framework of the project "Building Resilient Urban Communities" (BReUCom), funded under the "Capacity Building in Higher Education" program of EU Erasmus+.

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Introduction

The symposium „Lessons learnt from Climate Change Adaptation in Europe“ took place at Danube University Krems (DUK) on August 28 and 29, 2019. A site visit to the local floodwater protection system took place on August 30.

This event was held within the framework of the project “Building Resilient Urban Communities” (BReUCom), funded under the “Capacity Building in Higher Education” program of EU Erasmus+.

Project team members from four Indian Higher Education Institutions and two Indian Non-Governmental Organizations as well as from two European Universities participated in the event, listening to and discussing with – mainly – Austrian experts in the field of climate change adaptation.

This assessment reports sums up the participants’ main take aways and the most prominent points of discussion during the event.

Symposium format

The symposium tested a rather unconventional format/ schedule in which each lecturer was given space to elaborate on her/ his specific topic in more detail than would be usual in conventional scientific conference settings. After each lecture, a significant amount of time was dedicated to discussion between lecturer and participants who would also actively draw comparisons between Indian and European situations.

After the symposium, participants gave the following feedbacks with regards to this innovative event format:

- The presentations were helpful in understanding to some extent what measures can be taken by different stakeholders at different levels to consider the impact of climate change in planning and implementation.
- The symposium shared new ways of addressing climate change - like the fire department session around the flood redressals in Krems and around migration. I think this added a multi-dimensional perspective of including various kinds of stakeholders within adaptation techniques.
- The approach to the symposium was interdisciplinary and intersectional. I think that added a lot of value to the sessions especially because the subject was around climate change adaptation, the holistic framework of the symposium was useful.
- Various case examples in varied research areas like, Heat island, Wind movement and green infrastructure helped in understanding the latest viewpoint and strategies in European context.
- The time for participant discussions was ample and helped in bringing in the narratives on climate change adaptation from India (the southern climate change challenges) too within the European examples.
- Open discussion and interactive sessions helped in bringing out the best ways of addressing climate change issues
- The symposia gave us opportunity to not only listen but also share our experiences from the field
- The session planning was well designed. The choice of topics, resource persons, field visits, time plan for responses etc. was well thought off and helped in making the symposium more engaging.

- It would have been good to have some experiences from Asia as well that could have been clubbed together
- Some of the terms used by the presenters were too technical to understand.
- Collective learning through the interactive sessions post each presentation.
- Exposure to the technology platforms, information systems and networks available in the European context for building resilient communities as demonstrated in the various presentations as well as during the site visit.
- Emphasis on community participation as an effective strategy for building resilience
- Views on socio-economic and legislative initiatives undertaken in the European Union and especially in Austria, which directly or indirectly aid in reducing risk and vulnerability.
- Diversity and the nature of interdisciplinary discourses through the topics augmented the understanding of the concepts in the European context.

Urban Heat Island (UHI) and micro-climate

Two lectures touched more in detail upon topics of microclimate and urban heat island. Feedbacks on these lectures are given here, followed by a collection of issues debated during the discussions, which ensued the lecturers' presentations.

Meteorological Impact of Climate Change for Housing in Cities

Lecture held by Herbert Formayr, University of Life Sciences, Vienna

The presentation emphasized on the effects of climate change and the concept of 'Urban heat Island (UHI)'. The session was instrumental in dispelling general misconceptions regarding UHI- The explanation regarding UHI as a nighttime phenomena as the heating of the atmosphere close to the urban surfaces in the night due to radiated long wave heat radiation was an eye opener. Also, the demonstration of the case study of thermal modelling for Vienna showed how rural fringes can be hotter than city centers in European cities during certain times of the year. The outcomes of the presentation as well as the thermal simulation models could be successfully adapted for Indian cities as an urban planning method to create conducive microclimate within the neighborhoods and also aid in effective management and adaptation to climate change related.

Topics and questions raised in discussion following the lecture

Role of Albedo for cooling effects

Albedo has biggest effect with regards to UHI – during daytime high albedo (values nearing 1,0; which corresponds to high reflectivity and thus bright color) of building surface does not help a lot in terms of cooling, but for minimizing UHI effects at night it is favorable.

Increased insulation considerably affects indoor temperatures in urban areas, especially during nighttime

Density of built form

Densification of already sealed areas to accommodate population growth is preferable to building on land, which has not been sealed so far.

Recommendable Vegetation and landscape

City specific local wind systems (as given by the topography) are relevant for exchange of air between urban area and surrounding regions; detailed modelling helps to identify challenges,

UHI effects depend considerably more on city structure and built up area than on global warming.

How to bring global figures on climate change to the communities? Which main information to take home?

Probability of heat stress will increase, become more frequent; how to communicate this? How to shelter from heat/ reduce impact of heat stress?

Quick fixes

Shading, trees – shadow roughly provides 5°C difference (as compared to direct exposure to sunlight), water, and plants: only if irrigated (dry plants do not help);

UHI in Global South

Mad rush for smart cities – "everybody wants to have a smart city";

Informal settlements display less UHI effects – different materials (less concrete), building typology (less high risers), and climatic conditions.

Slums could show the way to cope with climate change: light materials, flat street canyons; in thermal terms, they behave more like rural than urban areas. How to optimize life for those working in the streets of slums (as staying in the sun will become dangerous to health)? Shading of central places, developing adapted strategies for local conditions;

Relations between Flooding patterns and UHI

Flooding and global warming are not generally linked: temperature increase signals are much more homogeneous than flood patterns in meteorological models. Rivers strongly rely on snowmelt in Austria.

Due to climate change, intensification of hydrological cycles is observed. Precipitation regimes are especially affected in coastal regions and tropical climates, but they are far more complex than temperature predictions.

Reduction of UHI, optimization of daylight and density

What could be an optimized urban form with regards to UHI effects? Resolution of meteorological model up to now ranges between 2 and 10 km which is far too inaccurate to couple with urban simulation models; currently, resolution is improving to 100m and simulation of interaction between surrounding and built up area becomes slowly feasible. These tools are still in a phase of testing and improving which interdisciplinary collaboration is crucial right now.

Open spaces and vegetation

Existing urban areas can hardly be changed to create new open spaces. In newly built areas, provisions should be taken to include sufficient open green space. Population density should still be kept high.

Distribution of building mass, sky view factor (SVF) and prevalence of heat

SVF is relevant for both incoming and outgoing radiation. It can't be optimized in both ways: if SVF is low due to narrow streets – like in desert cities – outgoing radiation at night is trapped in these streets and buildings. Therefore, we need to ask: "What is the bigger problem?" If daytime maximum heat is the problem: narrow streets. If nighttime cooling is the problem: open up streets!

Energy consumption and demand

Climate modelling depicts outdoor temperature distributions. For indoor temperatures, indoor heat sources are more relevant than external ones. Release of AC machines' excess heat into street canyons as an anthropogenic heat source has become a contributor to UHI in megacities, which needs to be taken into consideration in modelling – with new tools available, this becomes feasible nowadays.

Linguistic confusion about Insulation vs. isolation

Thermal insulation was discussed in misleading ways in this session, which is why it needs to be pointed out that thermal insulation interrupts heat exchange between outdoor climate and indoor temperature.

Heat stays outside, the skin of the building gets slightly hotter, but less energy is stored in it and released at night.

Harnessing wind and Ventilation for cooling in Urban Settings

Lecture held by Matthias Ratheiser, Weatherpark Ltd.

The session accentuated the importance of Urban Climate Analysis and the importance of establishing awareness through clear explanation and convincing evidence to all the stakeholders at the beginning of urban projects for strategic results. The presentation also emphasised on the importance of implementing and documenting pilot projects as crucial references. The discussions on Urban Climate Maps, Climate Function Maps and the use of technology to simulate future scenarios are all extremely relevant to the Indian context.

Topics and questions raised in discussion following the lecture

Urban climate advice map

If done from scratch, climate advice maps require enormous data collection: measurements campaigns, thermal flights, etc.

Factors considered in creation of climate advice maps: local climate as depicted in measurements of local weather station, distribution of building density, vegetation and water bodies, materials and their color;

All this information is superimposed in physical and metrological models,

These maps first and foremost form the basis for discussion, and prioritizing of adaptation measures.

Many bigger cities in Germany already have already established such maps and the numbers of these cities are further increasing, in Austria cities start to commission such maps right now; Zoom in/ out should be possible in such maps, down to building scope. Just producing these maps is not enough: they should be promoted actively in order for planners as well as the general public to be aware of them and to take them into consideration for building projects.

Examples for citywide recommendations

Define cold airflows and protect them – buildings should correspond to these airflows (and not block them).

Citywide interventions – for example: to paint roofs white, plant plants on all available roofs, prescribe to use specific, high albedo surfaces for roads etc. – have been proven to be problematic and non realistic

up to now as it takes decades to implement them on significant scale; cities are rather resistant to change.

Wind comfort vs. ventilation and optimal building alignment

"Some things that don't fit together": provision of wind comfort (shelter from wind) and improved ventilation (exposure from wind for cooling purposes) are mutually exclusive goals.

Simulation results evaluation

Measurements are done e.g. with balloons and models are then made to fit with measured data.

Percentage of correct results is difficult to indicate. Only qualitative evaluations are done, but no systematic quantitative evaluation – relying on expert knowledge helps to detect and skip implausible / physically incorrect results.

Citizen activists

Some activists' groups just don't want buildings to be built, compromise with them is thus impossible.

Traditional building materials in Austria

Protection against cold weather and snow, AC is still rather rare – we should keep it like that! We have to look to the south for adaptation strategies. External sun shades are rare: legal, technical reasons, heritage protection related obstacles

Trapping cold winds (landscape architects and climatologists working together)

Interactive analysis of building projects, problem identification for open public spaces, working together is important

Climatic aspects in hot and dry climates

Two examples, which are hardly talked about in India (modern masters):

- Otto Königsberger' design of Bubeshwara
- Some climate aspects in Chandigarh

Traditional wisdom: how to link it to modern knowledge

How to disseminate tacit knowledge, craftsmanship & bring in equality to reach the poor?

Lecturer's take away

- Issues with regards to UHI in India are basically the same as in Europe.
- There are, however, interesting differences. For me it was new that sound design is important to landscape architects.
- Actions for climate change adaptation which seam low tech and low threshold for us may be too expensive/too much effort for other communities.

Participants' take aways for UHI and micro climate

- The need for passive design responds to local climate and site conditions in order to maximize the comfort and health of building users while minimizing energy use was stressed. The key to designing a passive building is to take best advantage of the local climate, such as local micro-climate, prevailing wind conditions etc were highlighted.
- Climate change will have far-reaching impacts and consequences for urban Europe were evident from the various case studies presented on UHI. The impact will range from direct increase in

temperature and changed precipitation dynamics to indirect effects resulting from perturbations and climate change-linked events elsewhere.

- The session on 'Housing wind and ventilation for cooling in urban settings' helped in developing an understanding for cold airflow system in an urban area especially the micro-level detailing (positioning of trees with respect to airflow) at the local level for area planning. Such analysis done at the precinct level can really help to build climate sensitive maps for urban design and planning. This can also help us to realize the potentials of physical features of the city to modify the microclimate in a better way. Development Plans (DP) of Indian cities can include the layer of urban climate map for better management and mitigation of climate change scenarios.

- Analysis methods and climatic maps shown during various sessions will help in building climate sensitive design and planning in disaster-prone areas of India.

Resources for UHI and micro climate

- Slides for lecture "Meteorological Impact of Climate Change for Housing in Cities": https://www.breucom.eu/mod/folder/view.php?id=696 (Presentations_20190828/ Formayr_presentation_S2 CCA.pptx)
- Video of lecture & ensuing discussion:

https://donau-uni.presentations2go.eu/P2G/Player/Player.aspx?id=dkD1w5&token=aHR0cHM6Ly9kb25hdS11bmkucHJlc2VudGF0aW9uczJnby5ldS9QMkcvUGxheWVyL1BsYXllci5hc3B4P2lkPWRrRDF3NSZhY3Rpb249bGlzdCZyb2xlPWluc3RydWN0b3ImdXNlcj10YW5pYS5iZXJnZXJAZG9uYXUtdW5pLmFjLmF0Jmdyb3VwPWx0aV9ncnBfcHJqX2JyZXVjb20mcDJnX3RhZ2dpbmc9JnAyZ19kb3dubG9hZD0mcmVzb3VyY2VpZD0yJmNvbnRleHRpZD00MCZxdWVyeT0mdHM9MjAxOS0xMC0yOVQxNjozODoxNCZleHBpcmVkPTIwMTktMTAtMjlUMTg6MDg6MTQmdG9rZW49NTdBRDA2NTM5QzdDODlDRDlGRUI4MjU1QjRDNUNEMzg3RUNDODZBRjU3OEMyMEVEMUMwNjQwNUJCRDBDOUE5MSZkYXRlVGltZT02MzcwNzk2Mzg5NDgxOTYxMDIa:b&role=instructor&user=tania.berger@donau-uni.ac.at

- Slides for lecture "Harnessing wind and Ventilation for cooling in Urban Settings"

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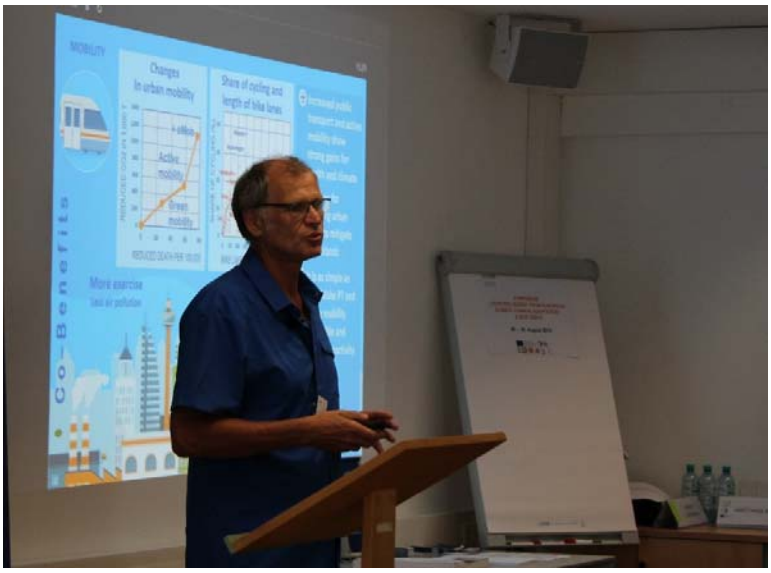
- Slides for lecture “National Austrian adaptation strategy: housing & health”
  Lecture held by Willi Haas, University of Life Sciences, Vienna



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Green infrastructure

Two lectures touched more in detail upon topics of green infrastructure. Feedbacks on these lectures are given here, followed by a collection of issues debated during the discussions, which ensued the lecturers' presentations.

Green Infrastructure's Socio-Ecological Responses to Climate Change

Lecture held by Christine Rottenbacher, Danube University Krems

The session emphasised on the multiple benefits of 'Green Infrastructure (GI)' and 'Ecosystem Services'. The research and impetus from the European Union in including Green Infrastructure as one of the key components of development by issuing a comprehensive set of guidelines and funding projects which emphasise on GI can be used as a compelling example for pushing for such public as well as private led large scale infrastructural projects in the Indian context as well. The 'Resilient Assessment Matrix' which was shared during the Campus visit at DUK, Krems is an effective tool to assess the microclimatic aspects and perceptions of the users of urban precincts. This method could be successfully adapted to the Indian context to be used as a supporting method to assess the ecosystem services of urban areas which can intern help in provisioning for future investments and development plans of GI in Indian cities and peri urban areas.

Topics and questions raised in discussion following the lecture

Environmental Sound

Not just noise but also human sounds, contribute to the perception of space;

Sound quality & attachment to place: how to investigate? How to generate pleasant ambiances (wrestling of leaves, splashes of water, cascades etc. in parks) – creating positive ambiance besides the positive effects for climate, ecosystem,…

Sound walks, qualitative surveys and acoustic measurements at regular intervals to assess sound quality, interpreting perception and sound levels

Health as a mayor benefit of green infrastructure

Green infrastructure influences the human microbiome – diversity of the microbiome strengthens immune system, working with soil, vegetation, sound has strong relaxing effects.

Governmental support for green infrastructure in Austria

- provision of information to the general public,
- tree planting initiatives,
- financial support provided for investigation of old trees (regarding their risk potential), tree cadasters,
- lack of support for spatial planning to counter surface sealing

Different levels of administration have different priorities and programs;

Landscape beyond trees and greenery

Large scale infrastructure projects in India are implemented by the government; need to go through a process of compliance, respect national building code – these do not speak of green infrastructure as a key element, which effectuates heavy reliance on grey infrastructure only. This seems to be different in Austria/ EU – has this previously been similar to the current situation in India?

Vienna and Graz's master plans incorporate green infrastructure; but guidelines for architectural competitions – as an example – do not pay attention to green infrastructure. Still lots of awareness building required in Austria also. Funding schemes changed first. So, incentives and guidelines are put in place, laws and regulations are lacking behind.

Green and blue infrastructure need to work together, this also pertains to sport infrastructure.

Interaction of Meso/ micro level

In India: national targets are set for percentage of forest cover etc. but no such regulation exists on regional and local level. Role of landscape planner in master plan preparation is almost zero. But the national government has recently initiated that cities, universities prepare master plans for green infrastructure;

"Green corruption"

Same samplings are circulated for "tree plantation" almost 20 times in a year in India, ("we are planting more than our population in terms of samplings"); but how to sustain these trees as there is often need for fire wood for cooking?

"polluter pays"- principle

In Austria, this principle is now also discussed in terms of surface sealing – but it is highly controversial! EU requirements in this regards need to be followed up upon – these EU requirements act as drivers for change.

Community participation

In classic spatial planning, there is hardly any interaction with communities in Austria so far; schools are good starting points for interaction – for example: there is a lack of tightly meshed weather stations for assessment of microclimate, but schools are interested to run recordings of weather data on their roofs with their students. This can be exploited as awareness raising measure.

Ideas for establishing connection with trees

Gujarat/ India: radio jockeys' annual awareness raising competitions for planting trees, with targets of how many trees to plant each year.

Austria: Planting a tree on the occasion of a child's birth (a rather rural tradition); tree horoscopes;

Indigenous species

Some Indian cities already consider green infrastructure, promote indigenous species. But due to climate change, some indigenous species can't cope with local climate anymore; which species to plant instead?

Green Infrastructure and Water Management

Lecture held by Tim Cassidy, Consultant

The session explained the potential of considering infrastructural networks as risk management strategies. The presentation also emphasised on ways of understanding aspects of environment through the lens of economics, (water budget/ carbon budget etc) and legislation (Water Framework Directive, Flood Directive etc). These are aspects which can be incorporated in the planning and management in the rapidly urbanising parts of India.

Topics and questions raised in discussion following the lecture

Water bodies

Even if just small canals – water bodies cool more effectively (within a range of 100 to 200m) than greenery, but combined infrastructure systems of both water and greenery work best.

Grey water

Usage of grey water (from bath tubes, water basins etc.) can be a cost effective way of bringing cooling to poor neighborhoods; local winds can blow away coolness.

Urban street tree

Urban street tree canopy can be very hot because it suffers lack of water, high intensity sun, and huge reflection coming off the ground (long wave radiation) – it might not be that helpful in terms of cooling.

Municipality can be the biggest driver in removing trees and greenery – in order to erect buildings.

Simulation of greenery's development is very important because you are not going to get the results in reality before 20 years

Participants' take aways for Green Infrastructure

- In the presentation titled 'Green infrastructure's social ecological responses to climate change', natural systems have the potential for providing climate mitigation solutions and simultaneously providing climate resilient and adaptation planning, especially in urban areas were highlighted through case studies. Further, it was emphasized that technology-based solutions, cultural-based solutions, and behaviorbased solutions should complement the work of nature-based solutions.
- Green infrastructure as an adaptable and multifunctional approach to storm water management and climate resiliency with many benefits for communities, such as improving water quality and conservation of water, strengthens the local economy and enhances community and infrastructure resiliency was presented. Successful solutions to inspire city managers, community leaders and engaged citizens looking to design their community space for better health, abundant water resources, and improved quality of life.
- The resilience assessment matrix for assessing the potential of various elements to enhance the Green Infrastructure Network and related ecosystem services are very useful. The modified version as per local context can be used for a rapid/quick analysis of smaller areas concerning provisions of green infrastructure for assessing resilience in our case study sites. The detailed matrix can become very useful for identifying the potential precincts and areas to start evaluating the resilience of green infrastructure in cities.

Resources for Green Infrastructure

- Slides and assessment file for lecture "Green Infrastructure's Socio-Ecological Responses to Climate Change": https://www.breucom.eu/mod/folder/view.php?id=696 (Presentations_20190829/ Rottenbacher_presentation_S2 CCA.pptx & resilienzassessment_donauuni_280819.xlsx)
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Community engagement

Two lectures touched more in detail upon topics of community engagement. Feedbacks on these lectures are given here, followed by a collection of issues debated during the discussions, which ensued the lecturers' presentations.

Participatory Risk Management

Lecture held by Franziska Schruth, Graz Stadtlabor

The session showed how participatory methods of community engagement could lead to innovative solutions in complex and dynamic urban contexts. The presentation showed multiple examples wherein eschewing sectoral thinking and laying emphasis on holistic approaches led to inclusive, liveable and people oriented solutions. The potentials of 'transformation through cooperation' and its outcomes in the European context were interesting.

Topics and questions raised in discussion following the lecture

What is "Social prototyping"?

Methods on how to work with people on site, differently done on each site, very often you can't copy such methods from others but have to find site specific solutions.

Which Stages of participation (Information/ consultation/ participation) were obtained in the presented Graz Living Lab?

People have been informed – this is an ongoing and important process. During the planning phase people were asked for their opinions, their wishes, how they use the district. Once architectural competitions were done, this information was transferred to the architects and they had to consider it in their detailing, - consultation ended there; no co-operation; trust building was a crucial component which was enabled due to the fact that processes were handled by the same people.

Graz Stadtlabor informs people via different channels, builds awareness for green infrastructure, but residents are not in a position to decide themselves about what will happen in their district; Graz Stadtlabor also talks to stakeholders: architects, planners, investors, …

Implementation is part of participation: recurring consultation events, information, people could get feedback on their suggestions.

Involving local actors

Examples for local actors involved in the participatory process (besides residents): Companies in the district (restaurants, shops, associations, research institutes), Austrian Railways (bordering the district), associations using the area e.g. for football, etc. People should be involved as early as possible when there is still room for change!

Local knowledge: Documenting & putting it to use

Local knowledge (e.g. about lack of open space, informal usage of barren building sites, shortcuts, how people use the district, what they enjoy etc.) can inform planning.

How this local knowledge can be put to use: Qualitative interviews with single persons; parts of these audio files were made accessible for listeners on the site; written documentation – filtering facts which are important for spatial planning & forward these to planners; distributing post cards with particular questions – people are asked to answer and send back; answers can be displayed; achieved;

Examples of problems tackled by Graz Stadtlabor

People are not very happy about change; we should not rest, we have to practice asking people, to make people feel responsible for their city,

Children's awareness of Flood Related Disaster Risks

Lecture held by Funda Atun Girgin, ITC University Twente, NL

The presentation showed how effective community participation of the most vulnerable and often neglected groups of the society- 'immigrant children' could be an effective strategy in developing persuasive content which could then be used for further generation of awareness regarding the notions of preparedness during climate related risks and vulnerabilities. This method could be adapted and used in the Indian context where a large number of the population especially children live in areas which are highly vulnerable. Generating pertinent awareness at the young age could be viewed as an effective strategy to ensure the goals of resilience building in communities are effectually tapped by the most vulnerable groups of the community.

Participants' take aways for Community Engagement

- Role and importance of community participation in designing and planning exercises shown through some case examples appeared to be one of the effective measures to build communities with a knowledge base about climate resilience

- The methods used for conducting a case study in Milan on children awareness of disaster risk was interesting and can be explored further to assess the awareness of children in disaster-prone areas of India. With participation from children, the process becomes more inclusive and can also help out to bring the radical alternatives especially in the Indian context where greater degree of disaster awareness is needed from an early age.
- The session on "Children are we prepared against floods" was very interesting, as we often think only about adults when it comes to teaching, informing or planning on climate change and resilience. We forget that there's another group that is also very much affected and can be trained much in advance to deal with such situations.
- The presentation on 'Children's awareness of Flood Related Disaster Risks' showed how effective community participation of the most vulnerable and often neglected groups of the society- 'immigrant children' could be an effective strategy in developing persuasive content which could then be used for further generation of awareness regarding the notions of preparedness during climate related risks and vulnerabilities. This method could be adapted and used in the Indian context where a large number of the population especially children live in areas which are highly vulnerable. Generating pertinent awareness at the young age could be viewed as an effective strategy to ensure the goals of resilience building in communities are effectually tapped by the most vulnerable groups of the community.
- The session on 'Participatory Risk Management' showed how participatory methods of community engagement could lead to innovative solutions in complex and dynamic urban contexts. The presentation showed multiple examples wherein eschewing sectoral thinking and laying emphasis on holistic approaches led to inclusive, liveable and people oriented solutions. The potentials of 'transformation through cooperation' and its outcomes in the European context was interesting.

Resources for Community Engagement

- Slides and assessment file for lecture "Participatory Risk Management": https://www.breucom.eu/mod/folder/view.php?id=696 (Presentations_20190829/ Schruth_presentation_S2 CCA.pptx)
- Video of lecture & ensuing discussion:

https://donau-uni.presentations2go.eu/P2G/Player/Player.aspx?id=dzFAmq&token=aHR0cHM6Ly9kb25hdS11bmkucHJlc2VudGF0aW9uczJnby5ldS9QMkcvUGxheWVyL1BsYXllci5hc3B4P2lkPWR6RkFtcSZhY3Rpb249bGlzdCZyb2xlPWluc3RydWN0b3ImdXNlcj10YW5pYS5iZXJnZXJAZG9uYXUtdW5pLmFjLmF0Jmdyb3VwPWx0aV9ncnBfcHJqX2JyZXVjb20mcDJnX3RhZ2dpbmc9JnAyZ19kb3dubG9hZD0mcmVzb3VyY2VpZD01JmNvbnRleHRpZD00MCZxdWVyeT0mdHM9MjAxOS0xMC0yNjo1NDoyMiZleHBpcmVkPTIwMTktMTAtMjlUMTg6MjQ6MjImdG9rZW49MDZERjUyQzc2RDk5RDY3NjQwQkUzRTU1RjcwRUQ5MkY5OTZFMjAyMUMyMUFCNDFFNENEN0ExQ0I1N0U3MzU5QiZkYXRlVGltZT02MzcwNzk2NDg2MjkxODAzMjYa:b&role=instructor&user=tania.berger@donau-uni.ac.at

- "Children's awareness of Flood Related Disaster Risks": Video of lecture & ensuing discussion:

https://donau-uni.presentations2go.eu/P2G/Player/Player.aspx?id=HQWL&token=aHR0cHM6Ly9kb25hdS11bmkucHJlc2VudGF0aW9uczJnby5ldS9QMkcvUGxheWVyL1BsYXllci5hc3B4P2lkPUhRV0wmYWN0aW9uPWxpc3Qmcm9sZT1pbnN0cnVjdG9yJnVzZXI9dGFuaWEuYmVyZ2VyQGRvbmF1LXVuaS5hYy5hdCZncm91cD1sdGlfZ3JwX3Byal9icmV1Y29tJnAyZ190YWdnaW5nPSZwMmdfZG93bmxvYWQ9JnJlc291cmNlaWQ9MyZjb250ZXh0aWQ9NDAmcXVlcnk9JnRzPTIwMTktMTAtMjlUMTY6NTQ6MjAmZXhwaXJlZD0yMDE5LTEwLTI5VDE4OjI0OjIwJnRva2VuPTZBQTlGRkNDNzJDQkQwMzE0MUQzN0JBQTdFODI1OEI5RjY5RTJFRkYxNkEzOERBNUEyQzdBMzQ5QjkyQTQ5NjcmZGF0ZVRpbWU9NjM3MDc5NjQ4NjA3OTYzNzgy&role=instructor&user=tania.berger@donau-uni.ac.at

and Part 2:

https://donau-uni.presentations2go.eu/P2G/Player/Player.aspx?id=cGAZ97&token=aHR0cHM6Ly9kb25hdS11bmkucHJlc2VudGF0aW9uczJnby5ldS9QMkcvUGxheWVyL1BsYXllci5hc3B4P2lkPWNHQVo5NyZhY3Rpb249bGlzdCZyb2xlPWluc3RydWN0b3ImdXNlcj10YW5pYS5iZXJnZXJAZG9uYXUtdW5pLmFjLmF0Jmdyb3VwPWx0aV9ncnBfcHJqX2JyZXVjb20mcDJnX3RhZ2dpbmc9JnAyZ19kb3dubG9hZD0mcmVzb3VyY2VpZD0zJmNvbnRleHRpZD00MCZxdWVyeT0mdHM9MjAxOS0xMC0yOVQxNjo1NDoyMCZleHBpcmVkPTIwMTktMTAtMjlUMTg6MjQ6MjAmdG9rZW49NkFBOUZGQ0M3MkNCRDAzMTQxRDM3QkFBN0U4MjU4QjlGNjlFMkVGRjE2QTM4REE1QTJDN0EzNDlCOTJBNDk2NyZkYXRlVGltZT02MzcwNzk2NDg2MDc4MDc3Nzga:b&role=instructor&user=tania.berger@donau-uni.ac.at

Flood water protection

Lectures held by Paul Seitz, Gebietsbauamt Krems and Gerhard Urschler, Fire brigade Krems

Site visit with P. Seitz

The session and the cycling trip along the River Danube to the Local Fire Station was an insightful experience on how well researched scientific data combined with participatory community action could converge to successfully mitigate flood damage to historic urban cores and flood susceptible urban areas. The need for 'city level emergency plans' and the active participation of the citizens in the flood preparedness are efficacious in ensuring the success of such ventures. The demonstrations of the execution of the flood control walls through photographs and live site visit was extremely helpful and can be adapted to avert major damage in similar flood prone Indian cities.

Participants' take aways for flood water protection

- The role that the fire department played on addressing flooding issues was surprising and appealing
- The site visit to Wachau by bi-cycle were thoughtful and a good experience, where in addition to site seeing, practical exposure on flood disaster management along with Danube river were well demonstrated. The community's preparedness and proactive measures through designing and constructing mobile walls can act as a blue-print for other flood-prone cities.
- Flood control system and approach for preserving the character of world heritage site discussed during fire department session are appreciative and great learning.
- The site visit to Wachau was very fruitful in terms of experiencing the adaptive capacity towards flooding. The enthusiasm of the staff and involvement of citizens during the preparedness of the disaster was commendable.

Migration as an adaptive measure

Lecture held by Mathias Czaika, Danube University Krems

The session on 'Migration as an adaptation strategy' highlighted the chronic nexus between climate change and migration. The latest case studies and relevant data from around the world including India which was presented was imperative in shaping our understanding about the nuances of migration triggers, aspirations and behavioural responses in the present era.

Participants' take aways for Migration

- Climate change adaptation strategy on migration issues within and outside the regions were extensively discussed. Policy makers for finding practical adaptive capacity measures that can offset the challenges at the original homes of migrants were emphasized.

- The Migration as an adaptation strategy was interesting though it can be contested but got to know how migration can help people to adapt to environmental stress. Inclusion of Indian cases while highlighting the stress versus net migration helped in comprehending the phenomenon in much holistic way.

Resources for Migration

- Slides and assessment file for lecture "Migration as adaptation strategy": https://www.breucom.eu/mod/folder/view.php?id=696 (Presentations_20190828/ Czaika_presentation_S2 CCA.pptx)
- Video of lecture & ensuing discussion:

https://donau-uni.presentations2go.eu/P2G/Player/Player.aspx?id=cRy9gK&token=aHR0cHM6Ly9kb25hdS11bmkucHJlc2VudGF0aW9uczJnby5ldS9QMkcvUGxheWVyL1BsYXllci5hc3B4P2lkPWNSeTlnSyZhY3Rpb249bGlzdCZyb2xlPWluc3RydWN0b3ImdXNlcj10YW5pYS5iZXJnZXJAZG9uYXUtdW5pLmFjLmF0Jmdyb3VwPWx0aV9ncnBfcHJqX2JyZXVjb20mcDJnX3RhZ2dpbmc9JnAyZ19kb3dubG9hZD0mcmVzb3VyY2VpZD0yJmNvbnRleHRpZD00MCZxdWVyeT0mdHM9MjAxOS0xMC0yOVQxNjo1ODo1MiZleHBpcmVkPTIwMTktMTAtMjlUMTg6Mjg6NTImdG9rZW49NkQ2ODgxM0FCOTA0RUM2MEQ2RDdGNzgwOUFEQzkwREM4QTUxOUIxNDc0RTgwQkJBM0IyQkEyQjI5MjFDMDk3RCZkYXRlVGltZT02MzcwNzk2NTEzMjQ2MTc0Mzga:b&role=instructor&user=tania.berger@donau-uni.ac.at

Symposium Schedule

	Wednesday August 28			Thursday August 29		Friday August 30		
	time	lecturer	topic	lecturer	topic	lecturer	topic	
Morning	10:00 - 11:00	Czaika	Migration as an adaptation strategy	Rottenbacher	Green infrastructure's social/ ecological responses to climate change	Seitz	Flood protection in Krems - political, legal & organisational framework	
	11:00 - 11:30	Discussion (Respondent: Renu Khosla, CURE)		Discussion (Respondent: I. Singh, NITH)		cycling through Krems		
	11:30 - 12:00	Break		Break				
	12:00 - 13:00	Formayer	Meteorological implications of climate change for housing in cities - UHI	Cassidy	Green infrastructure & water management	Seitz	Flood protection in Krems - excusion on bike	
	13:00 - 13:30	Discussion (Respondent:Adinarayane, SPAV)		Discussion (Respondent: Sandeep Menon)				
	13:30 - 14:30	Lunch Cafeteria		Lunch Cafeteria		Lunchbox		
Afternoon	14:30 - 15:30	Haas	National Austrian adaptation strategy: Health & Housing	Ratheiser	Harnessing wind and ventilation for cooling in urban settings	Rottenbacher	UHI mitigation in public spaces, Krems - excusion on bike	
	15:30 - 16:00	Discussion (Respondent: N.Sridharan, SPAB)		Discussion (Repsondent Saurabh Tewari, SPAB)		cycling back to campus		
	16:30 - 17:00	Break		Break				
	17:00 - 18:00	Atun Girgin	Children's awareness of flood disaster risk	Schruth	Participatory risk management	BReUCom team	Summing up findings for assessment report	
	18:00 - 18:30	Discussion (Respondent: Manoj Pamar, KRVIA)		Discussion (Repsondent Maria Lobo, SPARC)				