



Consortium Workshop

Higher Education, Urban Resilience, and Infrastructure:
How do we reimagine curriculum, content, and
delivery?

05 May, 2023

About the Workshop

The workshop jointly organised by IIHS and the Bartlett Development Planning Unit at UCL and in consultation with the Coalition for Disaster Resilient Infrastructure (CDRI) is part of phase 2 of the British Council's Going Global Partnerships grants (Top-up Grant). In this workshop we intended to identify how a curriculum focused on urban resilience and urban infrastructure resilience can be conceptualised in relation to its ability to respond to the knowledge and skill gaps identified in Phase I and what would be the most effective mode of delivering such a curriculum. In this workshop we intend to build further on the baseline curriculum and develop a full-fledged curriculum for its potential uptake across a range of HEIs in India and, potentially across other contexts.

Our aim is to deliberate on:

(i) Structure of the curriculum - to critically examine and build on the baseline curriculum and jointly arrive at learning objectives and pedagogical approaches

(ii) Teaching content - to deliberate on content that is appropriately aligned to the identified objectives - if new content would need to be developed, how could we collaboratively co-produce such content, and how existing content could be adapted to the DRI theme

(iii) Delivery - to co-develop a strategy and identify avenues for mainstreaming the curriculum (or parts of the curriculum) into existing HEIs and explore other alternate platforms

Workshop attendees

| Name | Designation and Affiliation |
|--------------------------|-------------------------------------------------------------------------------------------------------------|
| Mona Iyer | Dean, Faculty of Planning, CEPT University |
| Darshini Mahadevia | Professor, School of Arts and Sciences, Ahmedabad University |
| Anand Wadwekar | Associate Professor, School of Planning and Architecture, Bhopal |
| Rama Pandey | Associate Professor, School of Planning and Architecture, Bhopal |
| Umamaheshwaran Rajasekar | Director - Technical Support & Capacity Development, Coalition for Disaster Resilient Infrastructure (CDRI) |
| Geetika Singh | Senior Specialist - Publications, Coalition for Disaster Resilient Infrastructure (CDRI) |
| Purti Kohli | Sr. Project Manager, British Council |
| Arun Sahdeo | Program Management Specialist, USAID |
| Cassidy Johnson | Professor, Bartlett Development Planning Unit, University College London |

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| Amir Bashir Bazaz | Sr. Lead – Practice, Indian Institute for Human Settlements (IIHS) |
| Vineetha Nalla | Senior Associate, Indian Institute for Human Settlements (IIHS) |
| Gargi Sen | Senior Associate, Indian Institute for Human Settlements (IIHS) |
| Nihal Ranjit | Associate, Indian Institute for Human Settlements (IIHS) |
| Ananya Peddibhotla | Researcher, Indian Institute for Human Settlements (IIHS) |

Other members of the consortium in absentia

| Name | Designation and Affiliation |
|--------------------|-----------------------------------------------------------------------------------------------------------------|
| Ashwin Mahalingam | Professor, Indian Institute of Technology Madras, Chennai |
| Jacquleen Joseph | Dean, Jamsetji Tata School of Disaster Studies, Tata Institute of Social Sciences |
| N. C. Narayanan | Professor and Head, Ashank Desai Centre for Policy Studies, Indian Institute of Technology Madras, Bombay |
| Rahul Deshpande | Senior Associate Professor, School of Planning, Real Estate and Infrastructure (SPREI), NICMAR University |
| Purnamita Dasgupta | Chair Professor and Head, at the Environmental and Resource Economics Unit, Institute of Economic Growth, Delhi |

Workshop agenda

| Time slot | Topic |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:00 AM - 10:30 AM | Welcome and introduction to the workshop |
| 10:30 AM - 11:00 AM | Presentation on the baseline curriculum |
| 11:00 AM - 11:30 AM | TEA |
| 11:30 AM - 01:00 PM | Brainstorming session 1: Session-wise mapping of learning objectives, course content, and pedagogy with sessions on the structure and components of the curriculum |

| | |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01:00 PM - 02:00 PM | LUNCH |
| 02:30 PM - 04:00 PM | Brainstorming session (contd.): Session-wise mapping of learning objectives, course content, and pedagogy with sessions on the structure and components of the curriculum |
| 04:00 PM - 04:30 PM | TEA |
| 04:00 PM - 05:30 PM | Brainstorming session 2: to identify strategies and avenues for the delivery of the course |

Discussion Summaries

Introduction and setting the agenda:

A welcome note and introduction to the project and workshop on "*Higher Education, Urban Resilience and Infrastructure: How do we reimagine curriculum, content and delivery?*" was made by Dr. Amir Bazaz and the IIHS research team. The following key findings from Phase 1 of the project were highlighted:

1. Urban resilience in higher Education Institutions (HEIs) are currently being taught on a spectrum between 'disaster resilience' on one end and 'infrastructure planning' and design on the other
2. The context of urban is not uniformly taught
3. Focus in most HEIs thus far has been on imparting technical knowledge over socio-economic aspects
4. Lack of a strong practice or place-based learning component in existing programmes, thereby leading to a myopic view of the urban infrastructure challenge
5. Faculty at HEIs however, recognize the need for interdisciplinary teaching and learning.
6. Early to mid-career faculty are gradually becoming more receptive to the idea of interdisciplinary teaching and learning
7. There is recognition for the need to focus on understanding the 'problem' better than proposing 'solutions'

Based on this, the key principles of reimagining HE and the baseline curriculum for this workshop are:

Interdisciplinarity as the key organising principle, to be reflected in elements of content, pedagogy and learning formats

Content:

1. This perspective needs to be fostered through a mechanism that integrates teaching, learning and on-site practice.
2. Organising a learning framework that is dynamic and enables a continuous and systematic exchange of knowledge across multiple learning sites, for example, across classroom and site of intervention.

Pedagogy

1. Greater integration of practice and site-based learning.
2. By design it will be structurally interdisciplinary, closer to the context

Delivery

1. Operationalisation of such an imagination in the context of HE would require an institutional space which, by design, fosters and mainstreams principles of interdisciplinarity
2. Experimenting with new institutions to facilitate and anchor content and innovative pedagogy.

The Baseline Curriculum:

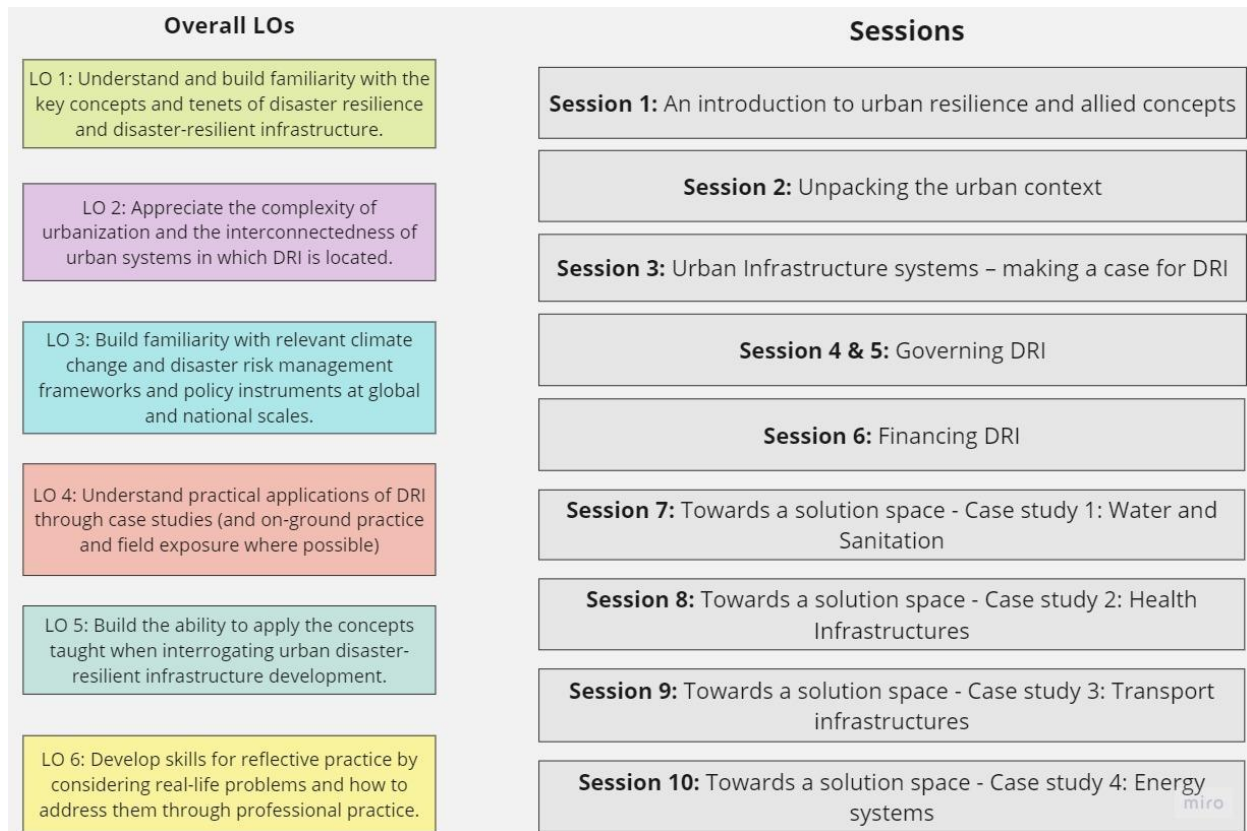


Figure 1. Miro Board snippet of overall learning objectives and sessions

Discussion 1: on learning objectives and course structure

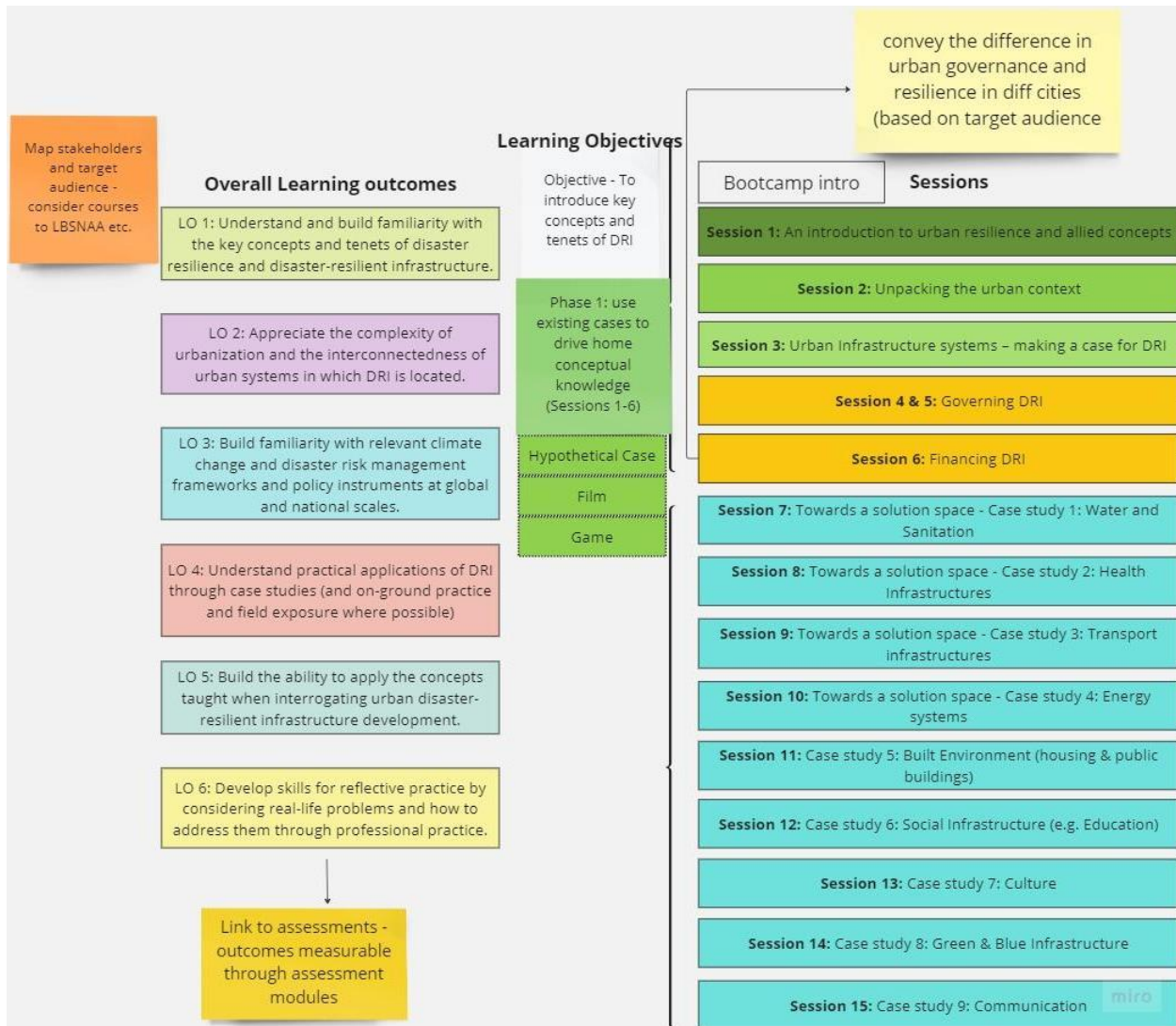


Figure 2. Miro Board snippet of discussion on learning objectives and course structure

The following were recommended with respect to learning objectives and the course structure of the baseline curriculum:

Learning objectives

1. Prof Darshini Mahadevia pointed out that the need to divide learning objectives into learning *objectives* and learning *outcomes* - the latter of which we intend the students should be able to do upon completion of the course
For instance, LO1 which reads *Understand and build familiarity with the key concepts and tenets of disaster resilience and disaster resilient infrastructure* can be restructured as follows:
Learning Objective: To understand key concepts and tenets of disaster resilience and disaster resilient infrastructure, which includes concepts such as disaster, hazard, risk,

vulnerability, recovery, adaptive capacity, and resilience, infrastructure, and values such as equity and justice

Learning outcome: Apply the concepts and tenets of the disaster resilience and disaster resilient infrastructure in real case situation

(Refer Annex 2 for full list of revised objectives and outcomes as provided by Prof. Mahadevia)

Assessments

1. On assessments, it was recommended that assessment modules should be designed in such a manner that the learning outcomes can be measured.

Structure and operationalisation

1. It was also recommended that in certain iterations/derivates of the curriculum, sessions 1-6 could be considered as a preparatory course that could even be offered online. Session 7 onwards, the focus could be more in terms of capacity building that can be curated as per target audience.
2. Given that multiple avenues to deliver the curriculum is being imagined, there was a recognition that the course content would have to be flexible. Additionally, a guiding note could be written up on how the content could be adopted to various formats (for example: how a practitioner with a specific sector interest could choose courses/format?). The content for case study sessions need to be open ended, to be adapted by the university or institution teaching them. Further, there was a recommendation to swap sessions 1 and 2 depending on the broader context (programme/course) that the curriculum is being taught.
3. It was also recommended to map stakeholders and target audience for the proposed course - as course material would have to be curated differently for different formats and audiences.

Content

1. All participants recognised that there exists a gap in teaching how to frame a 'problem' - in this case that of urban resilience.
1. Additionally, there was a recognition for the case studies to be guided by a broader framework or template and for the need to develop a framework/template for case studies that we intend to teach from session 7 onwards (See annex 1 for template proposed by Prof. Darshini Mahadevia)
2. In the initial iterations of the course, existing research and content within the consortium could be used before a repository could be created. This repository could also consider including work from learners, theses on specific sectors which could be converted into case studies that could be shared publicly.
3. There was recognition that at the moment certain disasters (such as floods) receive more attention when compared to other (especially slow onset ones), and a whole range of disasters must be considered when developing case studies. In the same vein, a wider geographical range (including island and hilly terrains) in case studies must also be considered.

4. Case studies could consider the idea of de-risking sectors for minimal disruption of day to day activities and financial aspects.
5. Potential sources of case studies
 - a. Case studies on disaster resilience submitted by countries as part of G20
 - b. Case studies developed from CDRI's work in the different infrastructure sectors
 - c. For Indian cities, can look into National Institute of Urban Affairs (NIUA) resources. Cases can be taken from the CITIs programme¹.
 - d. World Economic Forum - repository of textual case studies. more sector wise, from a climate finance POV
 - e. GFDRR - collection of flooding case studies

Discussion 2: on session content and pedagogy



¹ CITIS Program: <https://citiis.niua.in/>

Figure 3. Miro Board snippet of discussion on sessions (content is discussed in the text)

Content

1. Sessions 1, 2 must distinguish between shocks and stresses, must focus on every day risks in addition to risks from natural, climate induced hazards. The sessions must also discuss existing standards and systems in place
2. Sessions 1 and 2 must also emphasize that these are fluid concepts and the difference between a hazard and disaster - glossaries and readers must be used for this.
3. Session 1 and 2 can hinge on 3 core concepts -Urban, Disaster and Resilience and discuss the concepts along with a glossary of terms. The instructor may have options - case, film or a game to teach this session.
4. Sessions 1 and 2 must also focus on not just impacts on cities, infrastructure but have a more holistic understanding of impacts on communities and people
5. Importantly, the session on urban (session 2) must discuss interconnectedness of urban systems, the urban-rural difference, fluidity in the urban and unpack what risk is in the urban
6. Session 3: Urban management must discuss different actors and overlapping roles. On that note, it was suggested that Water and Sanitation should not be clubbed in one case since they have
7. Session 4: could include introduction to urban governance - on basic governance in the urban before discussing risk governance. It was also recommended to approach the idea from the pov of human, social vulnerability.
8. Session 4 must discuss the three overlapping forms of governance - urban governance, risk governance and infrastructure governance clearly. How are infrastructure decisions made? How infrastructure situated vis a vis climate induced hazards? case studies on how infrastructure management operates during the time of disaster. The content should also allow learners to engage in discussions about cross-cutting factors in infrastructure governance.



9. Session 4,5,6: It was also recommended that the three sessions (Governance + Finance) could be taught using one case to connect the three, in addition to a glossary. In addition a clear actor mapping (state and non-state) with their roles must be identified and illustrated.
10. Session 6: Here the following aspects can be considered:

- a. Understanding the National disaster risk financing framework (G20) to create predictable systems to finance DRI building efforts
 - b. Emphasize on mainstreaming and leveraging risk transfer (ex: insurance). Emphasis also on the amount of effort and momentum it takes to create dedicated bonds that can finance risk reduction interventions
 - c. How can we bring risk reduction into yearly expenditure plans of local governments?
 - d. Debate in class on How can risk governance be innovatively financed?
11. Session 7: e.g. of a good case study for this session is of the [Global Sanitation Graduate School](#), in which two modules were developed in consultation with experts. The modules were ready for any university to pick up based on their needs. The universities decided their own programme based on their admin requirements. open source material.
12. There was also recognition that financial instruments would be beyond the scope of this curriculum. The session could focus on concepts viz. risk sharing, risk transfer, resilience dividend, cost-benefit analysis alongside National guidelines and Frameworks.
13. Toward including practice insights, sessions 7-10 which are case studies can include practitioner/industry masterclasses and insights.

Pedagogy

1. For session 1 and 2 a set of pedagogical approaches were discussed. The designated faculty could then choose the pedagogic tool they want to leverage:
 - a. Use of films to start conversation on urban, resilience, disaster etc.
 - b. Role playing/game theory to discuss base concepts
 - c. Hypothetical case to discuss concepts
 - d. Tracing history of key concepts such as resilience could be considered. Trace its evolution - milestones/ turning point - use prompts to trigger discussions
 - e. Event based approach/ understanding (eg: teaching infrastructure systems, risk, informality etc. via flooding) of conceptual landscape could lead to better learning. For these sessions (1-6), case studies of two cities in times of crisis management such as COVID could be considered for place based learning of the landscape of urban governance. This could help in covering complexity of governance and risk.
 - f. Use a city as a case/place to understand risk in a city from multiple points of view. Eg: orient from equity justice, built environment etc. how risks are created in cities, exacerbated and cascaded.
 - g. Allow for a space for students to recollect events that they might have experienced and build understanding on that.
 - h. A reader/vocabulary could be developed in advance and used in classroom discussion apart from as a resource.
2. For sessions 4 and 5 on governing DRI
 - a. Use of live cases to discuss state/non state actors and other stakeholders involved.
 - b. Illustrate the roles of different arms of the government through a case (ex: Indore waste management).

- c. Create a glossary of governance bodies, roles and actors.
 - d. Create a map of decision structures.
3. For session 6:
- a. Use an event to unpack how financial landscape works and the role of various actors.
Could build on the diagram from the previous session.
4. Session 7 onwards - Case studies: the list of projects and case studies from CDRI could be converted into sector specific case studies.

Discussion 3: identifying strategies and avenues for delivery



Figure 4. Miro Board snippet on avenues for delivery

1. Utilize capacity built by the CDRI Fellowship via fellows' proposals, research undertaken and networks built
2. Leverage opportunities within the Capacity Building landscape in the Indian Government to run truncated version of this course/curriculum in India for decision makers (and for other countries as well). Here, especially in india, case studies can be used as immersive, place based experiences
3. Leverage CDRI's academic network that is being developed
4. A certificate programme could be considered hosted in UCL with British Council Support. The UK Network being built by DPU/Cassidy can be leveraged for this as well
5. Practitioners and industry experts along with academics from other HEIs can be leveraged for masterclasses, discussions and debates around urban resilience and DRI.
6. For a graduate course imagination, important to identify who (HEI) can anchor it.
7. A certificate program is possible if the Indian Consortium (in a multi-organizational effort) can together indicate to funding organizations what is required, timelines and resources required to deliver it.

Case studies and other resource lists



Figure 3. Miro Board snippet of potential case studies

Credit/Course options

1. Ahmedabad University is developing its undergraduate course where 1 credit is for 15 hours. In the graduate level courses, more reading time has to be allotted compared to the teaching time (3 hours reading time for every 1 hour of teaching).

Thus, the same course can be developed for undergrad and grad school- but reading material and prep time can vary. For Graduate level it may be better to have more modular electives

Annexures

Annex 1

Case Study Template – Draft (11/05/2023)

Indicative Template

| Urban System Attributes | Disaster Risk Reduction Attributes (from Disaster Risk Reduction Concepts), for example | | | | |
|--------------------------------|-----------------------------------------------------------------------------------------|----------|------------|----------------------|--------|
| | Risk (vulnerability, Hazard, Exposure) | Recovery | Resilience | Adaptive Capacity | Equity |
| Institutions | | | | | |
| Actors | | | | | |
| Financing* | | | | | |
| Operations | | | | | |
| Management | | | | | |

Note:

- For each hazard; for each one-time high-intensity hazard; for low-intensity slowly unfolding hazard.
- Similar format to be used for each disaster.

Annex 2

Learning Objectives and Learning Outcomes – Draft (11/05/2023)

Learning Objectives

1. To understand key concepts and tenets of disaster resilience and disaster-resilient infrastructure, which includes concepts such as disaster, hazard, risk, vulnerability, recovery, adaptive capacity, and resilience; infrastructure; and values such as equity and justice.
2. To be introduced to the term urbanization, its status and complexity and interconnectedness of urban systems in the specific country context.
3. To be introduced to the relevant climate change and disaster risk management frameworks and policy instruments at global and national scales.
4. To be introduced to urban governance concepts and situation in a specific country, which includes understanding of institutions and actors (formal and informal), financing of risk, and system of operations and management of the selected infrastructure.
5. To be introduced to the DRI through case studies (and on-ground practice and field exposure where possible).

Learning Outcomes

On the completion of the course the students will be able to:

- i) Apply the concepts and tenets of the disaster resilience and disaster-resilient infrastructure in real case situation.
- ii) Identify urban area boundaries and layout the interconnectedness of urban infrastructure's in real case situation.
- iii) Discern the disaster risks to urban infrastructures in a familiar city and identify and apply disaster risk management frameworks and policy instruments at global and national scales.
- iv) Build the ability to apply the concepts taught when interrogating urban disaster-resilient infrastructure development in a specific city context and for different infrastructure such as water supply and sanitation, power, public transport (bus-based and rail-based), health, education, etc.
- v) Build ability to identify strengths and weaknesses in the existing system of disaster-risk management for each infrastructure and move to propose solutions.
- vi) Develop skills for reflective practice, though considering real-life problems and attempting to move to solution space.

Note: Assessment modules can be linked to the Learning Outcomes. Suggested assessment components are:

Assessment 1 – An essay on concepts based on reading

Assessment 2 – Student's/ course participant's reflection on disaster risks to selected infrastructure in a case study city

Assessment 3 – Map the boundary and infrastructure governance contours of a case study city.

Assessment 4 – Application of concepts of disaster risk assessment on selected infrastructure in a city and identify strengths and weaknesses in the existing system of disaster-risk management for each infrastructure and move to propose solutions.

Photos

<https://drive.google.com/drive/folders/1aqAa9leBaCz95F1Djy28N6WKeqPskrcR?usp=sharing>





