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# **Training on Multi-hazard Risk Assessment for Risk Reduction Planning**

# ***12-15 February 2024, Kathmandu***

### **Background**

Multi-hazards pose significant risks to communities and critical infrastructures. The interaction of multi-hazards results in compounding consequences that can exhaust the capacities and functions of the local governments. Unplanned urbanization, population growth, and climate change are further limiting the resources and capacities of the governing bodies. To manage and reduce the residual, current, and future multi-hazard risks followed by resilient development, the local governments require robust risk-informed spatial planning, considering the prevalent hazards, land use, elements-at-risk, and its associated vulnerabilities.

The concept of multi-hazard risk assessment is evolving. The term ‘multi-hazards’ refers to possible and relevant hazards, and their interactions in a given spatial region and temporal period. Multi-hazard assessment adopts to applying methodologies and approaches designed to evaluate and map the potential occurrence of various types of hazards within a designated geographic region. In a multi-hazard context, vulnerability assessment encompasses a range of dimensions, including social, environmental, economic, and physical aspects, and is dynamic. Interpretation of the multi-hazard risk assessment results is expected to assist the local government in identifying the areas suitable for future developments, plan for sustainable mitigation measures, anticipatory actions and early warning systems to build risk-resilient communities.

In an effort to strengthen the capacities of government officials from ministries and departments responsible for disaster risk management in Nepal, APCICT, in partnership with the UNSPIDER and National Disaster Risk Reduction and Management Authority (NDRRMA) and in collaboration with the Geoinformatics Center/Asian Institute of Technology and ITC-University of Twente will conduct training from 12-15 February 2024

### Objectives

By the end of the training, participants will:

* Understand the concepts of hazard assessment, elements at risk mapping, vulnerability assessment, and risk assessment.
* Retrieve the spatial data requirements for risk assessment.
* Generate an elements-at-risk database using GIS.
* Formulate the requirements of hazard data and methods.
* Apply various methods for vulnerability assessment.
* Generate risk maps for risk-informed decision making.
* Understand how risk changes when risk reduction alternatives are adopted.
* Have insight into how a risk assessment could be carried out considering future changes.

### **Resource Persons**

Prof. Cees van Westen, Department of Earth System Analysis (ITC), University of Twente  
Dr. Manzul Hazarika, Director, Geoinformatics Center, Asian Institute of Technology

Mr. Anish Ratna Shakya, Research Associate, Geoinformatics Center, Asian Institute of Technology

### **Participants’ profiles**

The training is open to government officials from ministries and departments responsible for disaster management, and professionals working as urban planners, engineers, architects, geographers, environmental specialists, university teachers etc.

### **Modality**

The training will be organized at the Institute of Engineering of Tribhuvan University, Pulchowk Campus and learning materials will be stored in the CANVAS platform.

### **Certification**

A certification of completion will be issued to participants who met the evaluation criteria.

### **For information, please contact:**

Ms. Nuankae Wongthawatchai, Programme Officer, APCICT/ESCAP [wongthawatchai@un.org](mailto:wongthawatchai@un.org)

### **Tentative Programme**

Day 1

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| **Time** | **Description** | **Resource Person** |
| 9.00 -10.30 | Participation Introduction and Introduction to MHRA for Risk Reduction Planning | Cees |
| 10.30 -10.50 | Break | |
| 10.50 -12.00 | Lecture: Multi-hazard Assessment | Cees |
| 12.00 - 13.30 | Lunch break | |
| 13.30 - 14.30 | Lecture on Bipad Portal | YIL (TBD) |
| 14.30 - 15.00 | Flood mapping FastFlood | Anish |
| 15.00 - 15.20 | Break | |
| 15.20 - 17.00 | Practical: Registration in RiskChanges, Entering hazard input data in RiskChanges (demo dataset) | Anish, Rabina |

Day 2

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| --- | --- | --- |
| 9.00 -10.30 | Lecture: Elements-at-risk (EaR) Assessment | Cees |
| 10.30 -10.50 | Break | |
| 10.50 -12.00 | Lecture: Vulnerability Assessment | Cees |
| 12.00 - 13.30 | Lunch break | |
| 13.30 - 15.00 | Practical: Entering EaR and vulnerability input data in RiskChanges (demo dataset) | Anish, Rabina |
| 15.00 - 15.20 | Break | |
| 15.20 - 17.00 | Presentation/Discussion: Evaluation of use of risk information | Participants |

Day 3

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| 9.00 -10.30 | Lecture: Loss and risk estimation | Cees |
| 10.30 -10.50 | Break | |
| 10.50 -12.00 | Practical: Exposure, loss and risk assessment in RiskChanges (demo dataset) | Anish, Rabina |
| 12.00 - 13.30 | Lunch break | |
| 13.30 - 15.00 | Lecture: Risk Reduction Alternatives | Cees |
| 15.00 - 15.20 | Break | |
| 15.20 - 17.00 | Practical: Analyzing risk reduction alternatives (demo dataset) | Anish, Rabina |

Day 4

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| 9.00 -10.30 | Lecture: Future Scenarios and the Changes in Risk | Cees |
| 10.30 -10.50 | Break | |
| 10.50 -12.00 | Lecture/Discussion: How to develop your own data for MHRA? | Cees/Anish |
| 12.00 - 13.30 | Lunch break | |
| 13.30 – 13.45 | Closing session | |