**Risk Sensitive Land Use Planning**

**Session 1 - What is Risk Sensitive Land Use Planning? Concepts and Terminology**

This session reviews the basic concepts and terminology of land use planning in the context of urban vulnerability and disaster risk reduction. It looks at main characteristics of contemporary land use planning, the implications of land use decisions on development and disaster risk and argues for considering risk mitigation in land management decisions. It discusses the most common institutional and legal set up and the role of different levels of government - central and local -in land use decisions. The session concludes that effective land use planning most likely to be pursued at local level. This allows addressing environmental issues, regulating land use patterns at individual level, enforcing safe construction practices in projects and coordinating community based early warning systems.

**Session 2 - Establishing Basic Parameters: Risk Assessment**

The presentation introduces the risk assessment, an important analytical process that identifies the severity and spatial distribution of risk and generates the necessary information and data for risk sensitive land use planning . It discusses the elements of risk, such as hazard, vulnerability and capacity and provides a step by step review of various techniques for risk assessment, from quantitative to participatory methods. The session reviews the specific approaches based on different level of sophistication of the analysis, such as risk checklist, risk matrix, scenario analysis and time-based probabilistic assessment. The session concludes with highlights indicating how disaster risk assessment fits into the land use planning processes.

**Session 3 - How to Implement Risk Sensitive Land Use Planning? Policies and Practice**

This session presents some of the methods and tools of contemporary land use planning. It illustrates that in order to take full advantage of land use planning in reducing disaster risk, it is important to develop a comprehensive risk management approach. Following the overview of the different planning methods, the session discusses the most commonly used land use planning tools such as building codes, standards, zoning, land pooling and land readjustment. This later is important to proactively deal with informal and marginalized settlements, one of the areas of urban vulnerability that requires special attention. From risk reduction perspective additional areas of interest include critical services, infrastructure and climate change, which are reviewed in more detail with factors controllable and beyond of local government control. The final slides establish the specifics of enabling environment such as local institutional capacity, financing options and collaboration with the third sector.

**Case Study 1 - The Comprehensive Land Use Plan (CLUP) of Dagupan City, Philippines**

The Comprehensive Land Use Plan (CLUP) of Dagupan City is an example of a comprehensive planning process that incorporates disaster risk factors in the analysis of existing and potential land use patterns and in the evaluation of urban land use form that is suitable for the city given its exposure to various natural hazards and disaster risk profile. Integrating underlying risk factors in land use planning, Dagupan. City CLUP, adopted in 2002, serves as a long-term guide for shaping the future physical growth of the city and serves as the basis for revising the zoning ordinance.

**Case Study 2 - Disaster Masterplan for Earthquake Risk Reduction and Mitigation in Istanbul**

Istanbul is a major population center with a prominent role in commercial and cultural activities. The city is more than 2500 years old, and in the last 50 years the population increased from 1 million to 12 million today. The rapid population growth led to an excessive need for housing, infrastructure facilities and services creating challenging tasks for city government to address them from planning, fiscal and human capacity perspective. The city is also highly prone to earthquakes, according to historical records, 120 destructive earthquakes hit in the last 2000 years. Considering the ground characteristics of Istanbul, the quality of construction, deterioration and corrosion of the buildings, the disaster risk is rapidly increasing. The case study reports on the development and implementation of the Earthquake Master Plan for Istanbul, the process of addressing the increased disaster risk through mitigation measures based on redevelopment of vulnerable districts and retrofitting public buildings.

**Case Study 3 - Land Use Planning for Flood Mitigation in Dhaka City Using Remote Sensing and GIS**

Dhaka is surrounded by distributaries of two major rivers, Brahmaputra and Meghna. Due to these river systems and low topography the city is subjected to periodic flooding since its early days. Flood mitigation became a major concern for land use planning in the city. This study reports on the use of remote sensing and GIS technologies to create flood vulnerability map of Dhaka city. First, using satellite data the flooded areas were mapped in a normal flood event. Than, according to land use types and population data, a population distribution map was created. Subsequently, population density data were compared with the maps of flooded area and this allowed to identify the at risk population during regular flood event. This map was also compared with Dhaka City Master Plan to assess the adequacy of the plan in flood mitigation aspect.

**Case Study 4 - The Case of Fault Zoning in the City of Muntinlupa, Metro Manila, Philippines**

In 1998, a field study conducted by the Philippine Institute of Volcanology and Seismology (PHIVOLCS) mapped several ground ruptures in the Muntinlupa area in Metro Manila. At the time of the study, movements along the ground fissures had damaged around 180 residential, commercial and industrial buildings. Following the PHIVOLCS study, the City Government of Muntinlupa passed a local ordinance establishing danger zones along the West Valley Fault. The fault zoning ordinance, aside from prohibiting human activity and use of property along the 10 kilometer zone, also included other non-structural risk reduction measures such as tax relief, relocation of affected residents, and financial assistance to the victims. This study looks into the implementation of the local ordinance and documents the outcomes of the policy and related sound practices which could be replicated in other cities and urban areas.

**Case Study 5 - Planning for Protection from Bushfires**

Bushfires represent an ever-present risk to life, property and the environment in rural and urban fringe areas in Australia. Though it would be ideal to have no development in or near bushfire-prone areas, due to the increasing demand for rural and urban fringe residential land, it remains likely that fire-prone areas will continue to experience development pressure. This in turn may lead to increased risk from bushfire. This case study on Bushfire Mitigation and Management in Australia examines current planning efforts for protection against bushfires that is undertaken at two broad levels, land use planning through planning schemes and bushfire management planning. The need for land use planning to take into account natural hazard risks to effectively prevent future disaster losses (including from bushfires) in areas of new development calls for an integrated approach to bushfire mitigation.

**Readings**