URBAN DISASTER RISK REDUCTION

STRATEGIES AND ACTIVITIES

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BUILDING CODE AND RISK SENSITIVE LAND USE PLANNING

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(UNDP/COMPREHENSIVE DISASTER RISK MANAGEMENT PROGRAMME – NEPAL)
Disaster Vulnerability of Urban Areas

Urban area characterized by:

- Huge concentrations of people, and physical and financial assets
- Engines of economic growth
- Urban poor in unsafe living conditions
- Located in hills exposed to geologically active zones
Urbanization and Disasters

Recorded disaster events and world urban population (1950–2006)

Urbanization Processes and Disaster Risks

**Unregulated Development**
- Settlements in hazard-prone areas
- Unsafe, sub-standard building and infrastructure construction
- Lack of open spaces

**Unplanned urban growth**
- Lack of or Inadequate planning and Poor plan implementation

**Inadequate Governance**
- Ineffective enforcement mechanisms

**Environmental Mismanagement**
- Unsustainable land use practices

**Social Destitution**
Risks from Climate Change
Climate Change and Cities

- Rising global temperatures, resultant changes in weather patterns and sea levels
- Increased number of extreme weather events such as tropical cyclones, flooding and heat waves
- Migration from rural to urban areas
- Urban heat Island; Dessert Regime conditions
What is Urban Disaster Risk Reduction?

- Disaster Risk Reduction is a method or tool to reduce the impacts of natural and human-made hazards. Such as tsunamis, earth-quakes, landslides, and climate change related events such as droughts, storms and sea level rise.
- Disaster Risk Reduction is a strategic approach with technical components. Such as land-use planning, infrastructure planning, education, preparedness and response.
- Disaster Risk Reduction can not prevent hazards from taking place, but we can reduce the impacts of hazards.

(Source: UN – ISDR)
What is Disaster Risk Reduction?

- **Risk** is a real or potential threat of a disaster that can lead to major loss of life, livelihoods and infrastructure.
- **Disaster** is the impact of a hazard.
  
  *The causes of disasters are we, the human beings; the way we build societies, how we live in vulnerable environments and how we put pressure on the environment.*

  Assistant Secretary General of UNISDR Margareta Wahlstrom

- **Vulnerability** relates to the ability of individuals, social groups and societies to plan for, adapt to and address risk factors, and recover after a disaster has occurred. Example Kobe vs Bam

Disaster Risk Reduction in urban areas is **Urban Risk Reduction**
Disaster Risk Reduction and Sustainable Urban Development

- Disasters do not only cause **loss of lives**, but result in major **economic setbacks**: livelihoods have to start from beginning, houses and infrastructure have to be rebuilt. Many years of investment can disappear in a moment. Sustainable development incorporates risk of disasters in the planning and implementing process.
- **Land-use planning and safe building construction** are key elements of urban planning and also the main tools for integrating DRR in urban planning.
Urban DRR

Urban DRR Approaches

Design based / Structural  
[Ensure Safe Construction]
- Regulatory
  - Building Codes
  - Retrofit standards
  - Hazard resistance standards
  - Standalone Ordinances
- Non-regulatory
  - Public Information
  - Training Programs
- Location based  
[Limit Development in Hazardous areas]
- Regulatory
  - Risk Sensitive Land Use Planning
  - Zoning & Micro-zoning
  - Subdivision regulations
  - Buyouts
  - Eminent Domain
  - Taxation
- Non-regulatory
  - Low cost loans & subsidies
  - Investment to induce development in non-hazardous areas
1. Kathmandu, Nepal

Possible number of deaths: 69,000

A study by GeoHazards International predicted a 6.0 earthquake would kill approximately 69,000 people in this growing city of about 1 million, the most densely populated district of Nepal.
Planning and Implementation Support for Urban DRR in Kathmandu Valley
Rationale for Planning and Implementation Support for Urban DRR:

Past: Unplanned Sprawl

The Wake up call
### Planning and Implementation Support for Urban DRR

- **Existing Policies:**
  - Nepal National Building Code (NNBC)
  - EIA/IEE
- **Need felt:**
- **Effective implementation of NNBC**
- **Risk Sensitive Land Use Planning (RSLUP)**
- **Planning norms (Risk based)**
- **Bye laws as per RSLUP**
- **Comprehensive DRM act**
- **Training curricula**
- **Strategies for Mainstreaming Urban DRR**
Intervention of

Planning and Implementation Support for Urban DRR

- **For Risk Sensitive Land Use Planning area:**
- **In 2011:**
  - Review, consolidation and validation of Kathmandu Metropolitan City – Risk Sensitive Land Use Planning (KMC – RSLUP)
  - Endorsement of KMC RSLUP through Municipal Council
In 2012:

- Capacity development of Engineers and Planners on RSLUP:
  - 30 planners/engineers trained on Risk Sensitive LUP;

- Valley Wide Framework for RSLUP drafted and recommended to develop a valley-wide Risk Sensitive Land Use Planning:
In 2012/13:

- Activity initiated on Comprehensive study of Urban Growth Trend and Forecasting of Land Use of Kathmandu Valley: (Lead Ministry: MoUD) Completion: End of May 2013.

Scope:

- Growth trend: Valley municipalities and adjoining VDCs,
- Assessment of Composite hazards,
- Forecasting and modeling of future land use pattern under different Risk/planning scenarios,
- Evaluation of existing byelaws and recommendations for Kathmandu Valley - Risk Sensitive Land Use Planning,
Implementations

- **In 2012/13:**
- Comprehensive study of Urban Growth Trend and Forecasting of Land Use of Kathmandu Valley:
- Impact of Fast Track / Outer Ring Road on Growth Trend and risk modeling
Planning and Implementation Support for RSLUP

- **In 2012/13:**
  - Comprehensive study of Urban Growth Trend and Forecasting of Land Use of Kathmandu Valley:
  - Multi – nucleated growth / Revision of Long Term Plan based on Risk scenario
In 2012/13:

- For Implementation of existing KMC – RSLUP;
- Preparing Infrastructure and socio-economic inventory of Core area of KMC and developing Regeneration Approach in the area (Building stock inventory, Socio-economic survey, vulnerability assessment, Regeneration approach);
- Demand creation for Urban DRR (Awareness raising activities)
Planning and Support for RSLUP

The identified major core area linking to Kathmandu Durbar Square are

- Thamel
- Tyodaaha
- Asan
- Indrachowk
- Durbar Square
- Bhimsensthan
Planning and Implementation Support for Urban DRR

Regenerated Urban Design
Reducing Vulnerability, Introducing street furniture, Façade change and greenery
In 2013:

Support KVDA, Valley DDCs and Municipalities in Developing RSLUP of Kathmandu valley, municipalities and VDCs in each district;
In 2013:
- Support KVDA in Revision of existing building byelaws of Valley in line with Valley RSLUP
- Support Valley municipalities in Updating/Developing of byelaws in line with valley RSLUP
In 2014:

Support Govt. in Developing Valley wide Risk Sensitive Transport Plan:
(No systematic study other than JICA 1993)

Scope:

- Integration of Risk Sensitive Land Use Planning and Transport Planning
- Addressing Change in Traffic demand and Land use
- Planning for Roadway throughput as well as for Passenger throughput
Planning and Implementation Support for Urban DRR

In 2014/15:

- Historical and Cultural areas Preservation Plan:
  - (Supporting policies for Conservation);

Urban Growth Containment Policies:

  - (Approaches to Green belt, large lot zoning, subdivision regulations, exclusive farming right)

Urban Spatial Strategy:

1. Strict Control (Kathmandu Valley Towns)
2. Growth Promotion (Outside the Valley)
3. Regulated Growth (Border Towns)
4. Promote Rural-Urban Linkage
In 2015:

Scaling Up of RSLUP in other growing urban areas of Nepal

Pokhara Valley (Pokhara and Lekhnath) - Hills
Chitwan (Bharatpur and RatnaNagar) - Terai
Kavre valley (Banepa, Panauti and Dhulikhel) – Satellite towns of Kathmandu Valley
Activities on National Building Code Implementation:

- Policy
- Capacity Development
- Awareness Raising
- NBC Implementation

Source: UNCRD, 2009
Activities on National Building Code Implementation:

In 2011

- National strategy for implementation of Nepal National Building code drafted
- Course curricula for Engineer’s Training drafted
- 60 Engineers trained on code compliant building design
- 60 Vulnerability and Post Damage Assessment trainings
- 200 masons in Kathmandu Valley trained on earthquake safe construction practices
Activities on National Building Code Implementation:

- Activities for 2012:
  - Developing Retrofitting Guidelines for existing buildings in Nepal

- Main Features:
  - Developing retrofitting guidelines
  - Course curricula for Masons, Middle level technicians and designers
  - Test training

- Time span: 9 months
  - Initiated on August 1, 2012
Activities on National Building Code Implementation:

- Implementation of Building code through Automation of Building permit process in Municipalities of Kathmandu and Lalitpur

- Automation of building permit process flow chart - emphasis on checking and monitoring process of code compliance in permit system;
- Forward and Backward entries
- Building inventory of entire valley
- Risk assessment
- Mitigation measures
- Retrofitting options and Regeneration Strategy

**Time span: 12 months**;
- Development phase of 6 months and support phase of 6 months
- Started on August 1, 2012
Activities on National Building Code Implementation:

- Supporting activities to Automation of BPS:
  - Programme for code compliant building investments by commercial banks: Demand creation
  - PPP strategy drafted for municipalities on NBC implementation: The structural analysis component to be partnered with professional consultants
  - Minimum Conditions and Performance measures of Municipalities (MCPM) to be NBC focused

Awareness Strategy
Activities on National Building Code Implementation:

- Developing a Video Toolkit of earthquake safe building practices
  - Main features:
  - Cater to the need of prospective house owners (90% of houses are owner built)
  - 12 episodes; each featuring different construction activities of a residential building.
  - Site selection - Foundation – substructures - Brick work Superstructures - Column, beams – Slabs – Finishing - Services
  - Non structural elements.
  - **Time span** - 6 months: Activity already started
  - Partnering with TV medias to broadcast the toolkit (One consultation conducted with Kantipur TV)
Follow up activities on Urban DRR – Building code implementation

- Strategy for licensing system for masons in municipality; 3000 masons to be trained in valley on earthquake safe building construction

- Building stock inventory, risk analysis and action planning

- Vulnerability assessment of Critical buildings and retrofitting options

- Safe House Wiring (Electrical) training

- Building Retrofitting Training

- Disaster Financing mechanism for buildings
Activities on National Building Code Implementation:

- Guiding principle: Phase wise Implementation

New and emerging towns: (For 3 Years)
- Preparing RSLUP and byelaws
- Establishment of BPS
- Integrating Basic Construction Guidelines in BPS

Medium cities: (For 3 Years)
- RSLUP, Byelaws and Planning norms
- Revision of BPS to integrate code provisions
- Introduction of MRTS

Large cities:
- RSLUP, Byelaws and Planning norms
- Strict NBC implementation
- Automation of BPS
Challenges to Urban DRR

- Minimal public interest in natural hazards;
- Pressure for local economic development;
- Lack of political will (Political Void in Local Bodies);
- Difficulty of operating programs in an intergovernmental setting;
- Deficiencies in management capacity;
- Lack of budgetary allocations for proactive measures;
- Emphasis on relief and reconstruction activities;
- Weak link between existing laws governing DRR and development functions;
- Gap between scientific and technological advancements and policies;
Finally

- In Medical Terms, they say..
- “Quit smoking before a heart attack makes you do so”..

- In Disaster Risk Reduction,
- “Implement Urban DRR before a disaster makes you do so.”

- THE CHOICE IS OURS
THANK YOU