



XXIV FIG International Congress - Facing the Challenges - Building the Capacity  
Sydney, Australia 11-16 April 2010

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Keynote Presentation  
Third Plenary Session: Facing the Challenges

# Climate Change and Sustainable Cities:

Major Challenges Facing  
Cities and Urban Settlements  
in the Coming Decades

By  
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14 April 2010



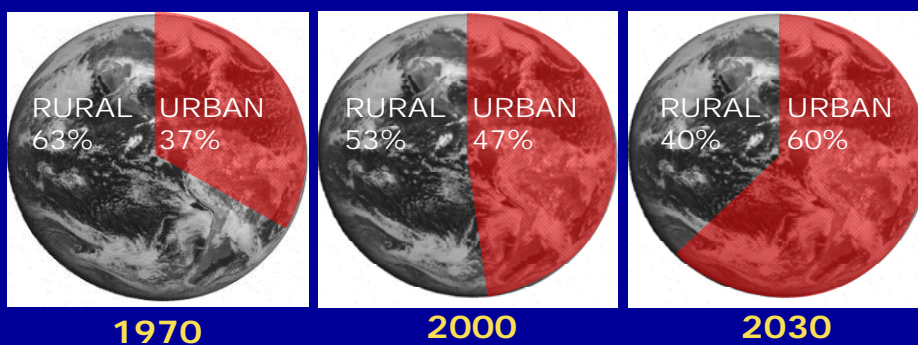


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# Urbanisation Trends

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## An urban era – the need for UN-HABITAT



Today, **1** in **2** persons  
on the planet is an urban dweller

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## Urbanization in the world

### Today,

- 5 million new urban residents per month projected in the developing world
- 93 % of urbanization is happening in developing countries
- By 2050, the developing world will have 5.3 million urban dwellers
- 63% of the urban population will reside in Asia alone i.e. 3.3 million

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## International perspective on urban environment

The **Habitat Conference**, 1976, identified a most universal development challenge as:

**“urban expansion”**

The **Rio Summit**, 1992, Agenda 21 explicitly introduced the concept of:

**“sustainable human settlements”**

The **Habitat II conference**, 1996, the Habitat Agenda underscored the need for:

**“sustainable urbanization”**

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## UN-HABITAT's mission and vision

Adequate shelter  
for all

Sustainable urban  
development



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## Position in development arena

Lead agency for the Millennium  
Development Goal 7 Target 11  
on improving living conditions  
of slum dwellers



United Nations agency for the  
built environment focusing on  
inclusive, greener, safer cities

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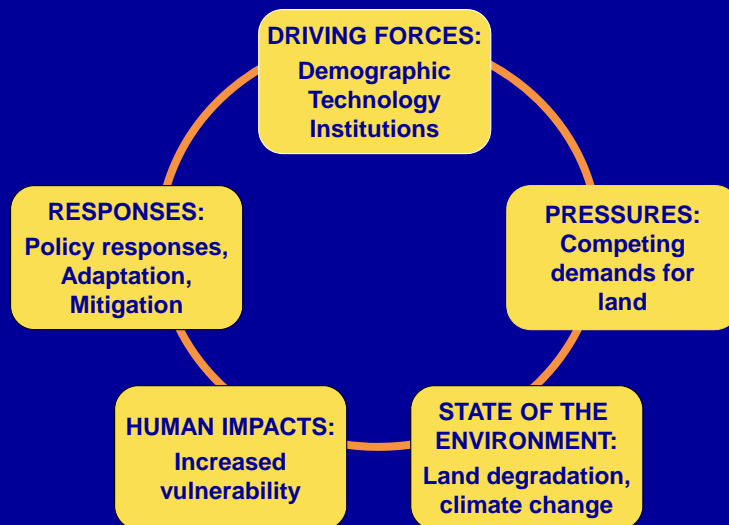


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# Conceptual Framework



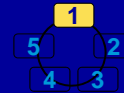
## Conceptual framework: Driving Force-Pressure-State-Human Impact- Response



## Conceptual framework: Driving Force-Pressure-State-Human Impact- Response

### 1. Driving Forces

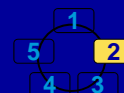
- **Economic growth**
  - Increased consumption
- **Population pressure**
  - High population growth
  - Immigration
- **Externalities/Market failures**
  - Missing markets
  - Imperfect markets
- **Transaction costs/ Imperfect information**
  - Lack of awareness of consequences
  - Lack of awareness of opportunities
  - Lack of collective action
- **Opportunistic behavior (Moral hazard, corruption)**
  - Inadequate laws and regulations
  - Inappropriate taxes and subsidies
  - Inappropriate public expenditure priorities
  - Policy failures
  - Lack of law enforcement



## Conceptual framework: Driving Force-Pressure-State-Human Impact- Response

### 2. Pressures

- **Increased food demand and demand for land for agricultural production:**
  - Forest clearing for extensive agriculture
  - Burning/removal of biomass
  - Use of erosive crops and cultivation systems
  - Inadequate investment in soil and water conservation
  - Overuse of fertilizer/pesticides
  - Depletion of resources
  - Inadequate fallow periods
  - Overgrazing
  - Monocropping
- **Urban land use:**
  - Congestion/expansion of slums
  - Uncontrolled settlement
- **Global warming:**
  - Rising sea level



## Conceptual framework: Driving Force-Pressure-State-Human Impact- Response

### 3. State of the Environment



#### □ Land:

- Erosion
- Compaction
- Pollution
- Loss of agricultural land
- Nutrient depletion
- Acidification
- Salinization
- Loss of residential land

#### □ Vegetation:

- Loss of biomass (carbon emissions)
- Loss of biodiversity
- Habitat fragmentation and destruction

#### □ Water:

- Low water use efficiency
- Pollution
- Siltation of irrigation systems
- Sea level rise

## Conceptual framework: Driving Force-Pressure-State-Human Impact- Response

### 4 Human impacts



#### □ Indicators for vulnerable groups – rural populations in poor countries:

- Poverty status
- Nutritional status
- Tenure security
- Access to clean water
- Access to markets
- Access to safety nets
- Exposure to climate change and risk
- Food security
- Access to health services
- Access to and distribution of land and other resources
- Access to education
- Control over local resources

#### □ Urban populations:

- Poverty status
- Health status
- Access to safety nets
- Access to employment
- Access to basic services
- Access to shelter with tenure security
- Influence/empowerment

## Conceptual framework: Driving Force-Pressure-State-Human Impact- Response

### 5 Responses

#### □ Local responses:

- New technology adoption, adaptation
- Local collective action

#### □ State responses:

- Improvement of laws, regulations
- Development of plans, strategies
- Investment in research, education
- Provision of safety nets for poor and vulnerable groups
- Allocation of government resources for action
- Dissemination of information and coordination

#### □ International responses:

- Coordinate global action
- Technical support
- Decentralization of power
- Removal of policy failures
- Correction of market failures
- Mobilize funds for action



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# Environmental Challenges Related to Land



## Main Environmental challenges related to land

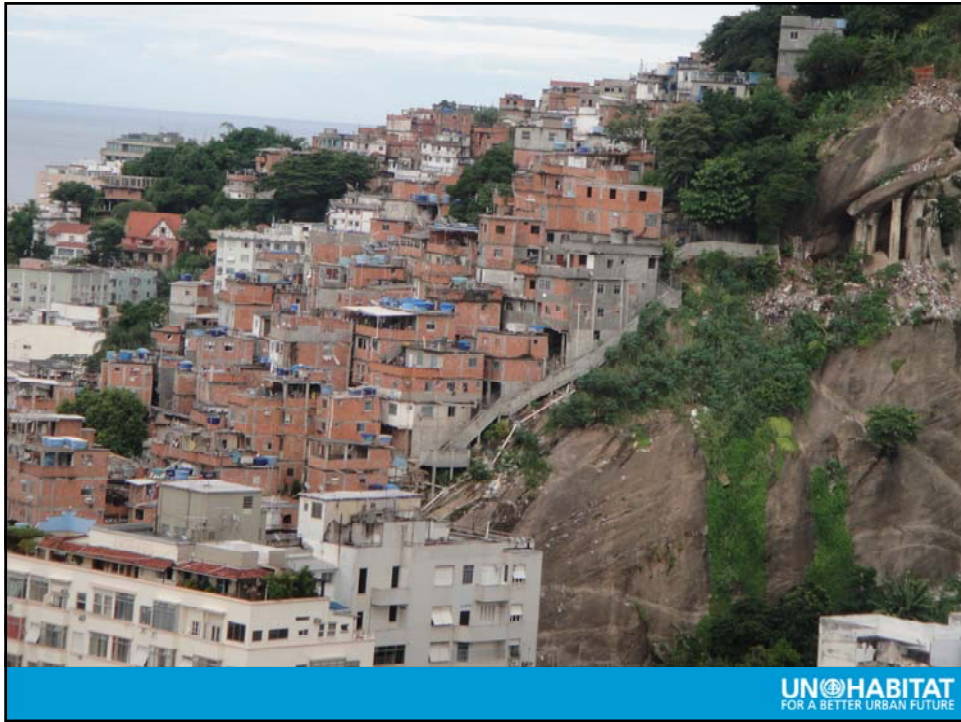
### *Unequal land distribution*

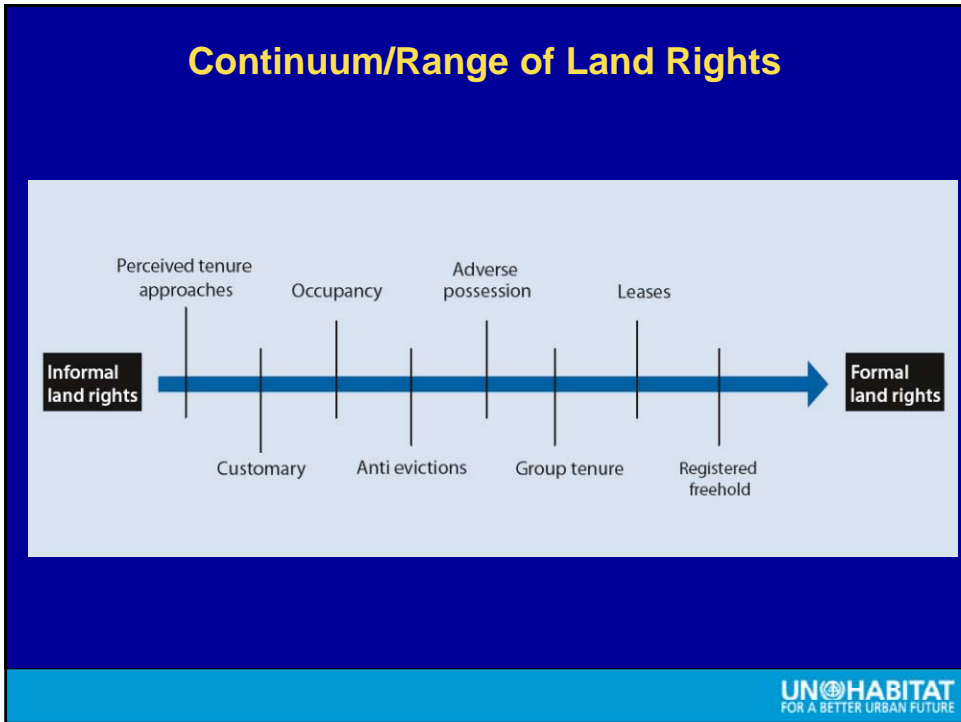
- Geographical poverty-environment traps.
- Increasing land fragmentation in densely populated areas.
- Unequal land distribution, land degradation and inefficient land use
- Unsustainable management including increased activity in land rental markets and short-term strategies on rented land.
- Threat by elite capture undermining land reforms.

## Main Environmental challenges related to land

### *Tenure*

- Tenure insecurity in relation to urban expansion
- Tenure insecurity for poor slum dwellers in developing countries
- Tenure insecurity undermining investment and leading to environmental mismanagement in urban and rural areas.
- Threats against flexible tenure systems in pastoral and agro-pastoral areas
- Increasing pressures on customary tenure systems that are in need of revisions.





## Main Environmental challenges related to land

### *Land Use*

- ❑ Encroachment of agriculture in particularly vulnerable and valuable habitats.
- ❑ Deforestation and forest degradation leading to carbon emissions, loss of biodiversity and mud slides.
- ❑ Environmental damage in “frontier” areas for new energy sources
- ❑ Sharp increases in demands for land for food and bio-fuel production displacing the poor.

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## Main Environmental challenges related to land

### *Climate Change*

- ❑ Increasing threats in coastal areas due to sea water rise and severe weather risk.
- ❑ Increasing threats to human settlements in coastal areas and islands
- ❑ Increased probability of droughts and erratic rainfall due to climate change

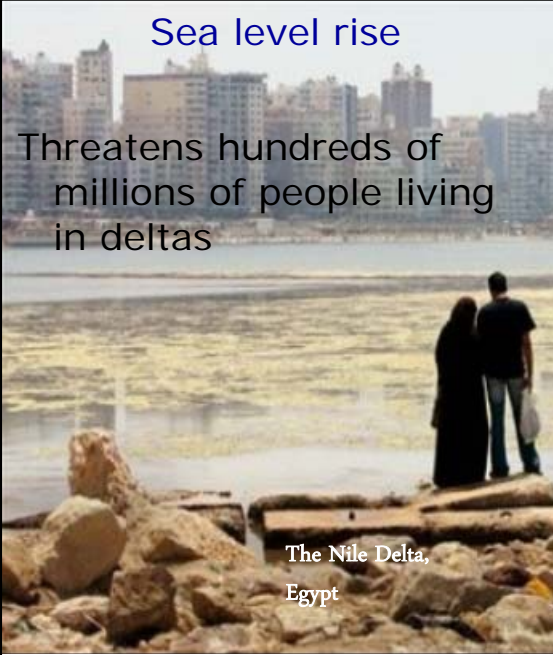
## Cities and Climate Change

### **In urban and peri-urban areas:**


- 75% of commercial energy is consumed
- 80% of all waste is generated
- 60% of Greenhouse Gas Emissions which cause global climate change emanate

## Sea level rise

Threatens hundreds of millions of people living in deltas



The Nile Delta,  
Egypt



Potential impact of sea level rise: Nile Delta

MEDITERRANEAN SEA

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## Sea level rise

Sea level rise threatens the disappearance of:

- small island states.

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## Sea level rise

If sea levels rise by just one meter, many major coastal cities will be under threat:

Buenos Aires	Rio de Janeiro
Los Angeles	New York
Lagos	Alexandria
Mumbai	Kolkata
Dhaka	Shanghai
Osaka-Kobe	Tokyo

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## Cyclones



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## Extreme weather patterns

In the past two years alone,

**120 million people**

have been affected  
around the world,  
mostly in developing  
and least developed countries.

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## Flooding and drought in the same year



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## Mud Slides



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# Cities and Climate Change

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## The role of cities in mitigation

Immediate actions to make our cities more sustainable include:

- Planning and land use controls
- Reduce our ecological footprint
- Transport modalities to reduce traffic congestion
- Improve air and water quality
- Green building designs

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## The role of cities in adaptation

We need to plan our cities and settlements to reduce vulnerability through:

- Effective urban management
- Planning and land use controls: prevent building in flooding and landslides risk zones (e.g., restrictions on building within 50 year floodplains in South Africa)
- Regulations, to encourage cyclone-resistant building practices

## Good business opportunity "Green Economy"

Opportunities for 'green' investments include:

- Clean, low-carbon infrastructure investments,
- retrofitting of buildings,
- the renewal of our transport systems
- urban wastewater methane gas capture
- efficiency audits of municipal buildings
- development of rapid transport systems



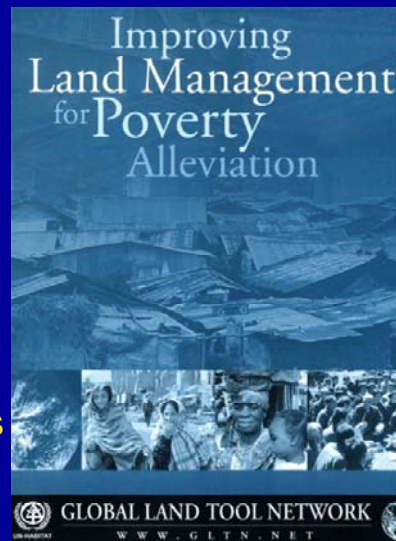
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# Key priorities and promising land tools

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## Global Land Tool Network (GLTN)

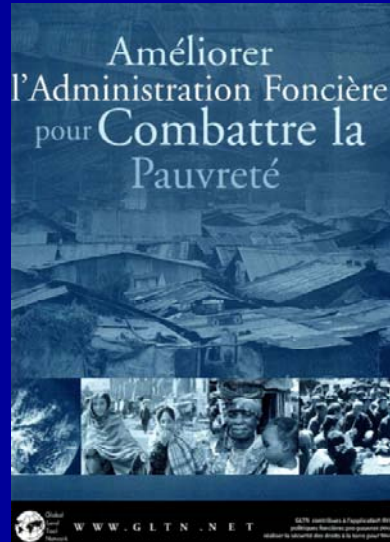
- ❑ Expanding network  
42 partners
- ❑ Multi-laterals  
FAO and World Bank
- ❑ Bilaterals  
Sida
- ❑ Professionals  
FIG, CASLE, RICS, FGF
- ❑ Training/Research Institutions  
ITC, UEL, IIUM
- ❑ Donor basket (Norway, Sida)



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## Global Land Tool Network (GLTN)

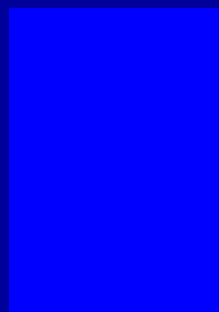
- ❑ Over 50 activities a year – events, tool documentation and development, publications, website
- ❑ Continuum of land rights and the Social Tenure Domain Model 2 of the 18 tools
- ❑ Innovative land management and land tenure tools address both technical and political



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## Key priorities and promising land tools

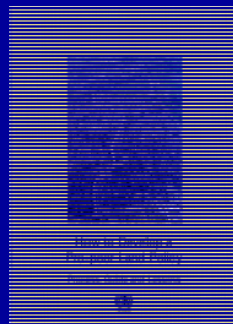
- ❑ Land Tenure reforms
- ❑ Land rights records and registration.
- ❑ Regulation of land markets to enhance sustainable land use.
- ❑ Land use planning.



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## Key priorities and promising land tools

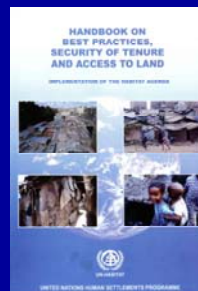
- Land management, administration and information.
- Slum rehabilitation and resettlement.
- Land law, regulation and enforcement.



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## Key priorities and promising land tools

- Payment of resource dividends
- Collective action for enhancement of environmental services.
- Participatory public works programs as safety nets and as means to invest in environmental conservation.

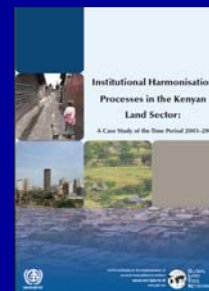
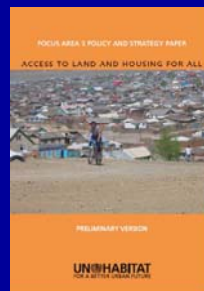


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## Key priorities and promising land tools

- ❑ Integrated rural and urban development
- ❑ Provision of tenure security in urban slums and rehabilitation.
- ❑ Rescue plans for areas threatened by sea level rise and storm floods.



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## Invitation

Cities face numerous and daunting challenges regarding climate change

No entity,

Public or Private,

Government or Non-governmental

Academic or Practitioner

can face these challenges alone

All those who are committed to turning ideas into action are welcome to join us in our quest for more sustainable urban development

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**Thank you**

