Strengthening capacities of MONGOLIA to mainstream climate change concerns into national urban related policies

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Bangkok, 17-18 March 2015
Mongolia

- Total area: **1,564,116 km²** (the world’s 19th-largest country after Iran)
- Population density: **1.7/km²** (236th)
- Capital: **Ulaanbaatar city**
- Population and population growth: **2,995,949 and 2.2%** (2014)
Mean sea level **1,580 meters.** An extreme continental climate

The geography of Mongolia is varied, with the Gobi Desert to the south and with mountainous regions to the north and west. Much of Mongolia consists of steppes.
Five regions: West, Khangai, Central, East and Ulaanbaatar

Administrative divisions: 21 aimags, 330 soums
Current Situation of the Population Settlements

Population of Mongolia in %

POPULATION OF MONGOLIA
2.99 million

In Percent

Rural Area 39%
Urban Area 61%

URBAN POPULATION

UB city 60%
Aimag centers and urbanized settlements 30%
Darkhan and Erdenet cities 10%

Migration  Urbanization  Population concentration
Climate Change and Urbanization Problems
**Current Climate Change**

Annual mean temperature change

Drought Index Change

Dzud (harsh winter) Index Change

The annual mean air temperature of Mongolia has increased by 2.14 °C between 1940 and 2008.

Source: MARCC 2009

**Climate Change Impact**

Extreme events and its intensity increases

Changes in land surface with increased desertification and decreased forest area...

Source: MARCC 2009

**Climate Change Projection**

Air temperature in Mongolia will increase by 3.1-5°C by 2099. Average warming is about 4°C.

Source: IMH, HadCM3 model
Common Risks in Mongolia

Source: http://www.preventionweb.net/files/4162_OCHAMNGHazardv1070705.pdf

Seismic, Volcanic and Tropical Storm Risk

Earthquake Intensity
Modified Mercalli Scale
- Degree I-V
- Degree VI
- Degree VII
- Degree VIII
- Degree IX

Tropical Storm Intensity
Saffir-Simpson Scale
- One: 118-153 km/h
- Two: 154-177 km/h
- Three: 178-205 km/h
- Four: 210-249 km/h
- Five: 250+ km/h

EXPLOSIONS, VOLCANIC Eruption, Tsunami, Tropical STorm, Storm Surge, Flood, Drought

UN Office for the Coordination of Humanitarian Affairs (OCHA)
Regional Office for Asia Pacific (ROAP)
Executive Suite, 2nd Floor, UNICEF Building
Rajdamrsvn Nat Ave, Bangkok 10200, Thailand

(c) 2006, Munich Reinsurance Company, Geo Risks Research Department
Seismic monitor of Mongolia
Number of earthquakes by time (1964 – 2004)
Economic loss due to disasters (percentage) 2000-2013

- Dzud: 68.06%
- Forest and steppe fire: 23.70%
- Building fire: 4.77%
- Snow and dust storm: 1.74%
- Human infectious disease: 1.07%
- Earthquake: 0.01%
- Industrial accidents: 0.05%
- Air crash: 0.08%
- Explosion: 0.01%
- Water accident: 0.02%
- Animal infectious disease: 0.40%
- Thunderstorm: 0.05%
- Flood: 0.03%
The new Mongolian constitution of 1992 guaranteed the people the right of free choice of their place of residence being the legal basis for the ongoing internal migration process in the country.

Graph 1. Number of migrating people in UB. 1989-2003
Ulaanbaatar city

<table>
<thead>
<tr>
<th></th>
<th>Mongolia</th>
<th>Ulaanbaatar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land area</td>
<td>1,564,100 km²</td>
<td>4,700 km² (0.3%)</td>
</tr>
<tr>
<td>Population</td>
<td>2.8 million</td>
<td>1.154 million (40.6%)</td>
</tr>
<tr>
<td>Population density</td>
<td>1.7 persons per km²</td>
<td>246 persons per km²</td>
</tr>
<tr>
<td>Urban population</td>
<td>67.9%</td>
<td>41.9% (62%)</td>
</tr>
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</table>

Comparison of the capital city share of the nation (by population and area)

Population share and population density, 2010 (by province)

Comparison of capital city population share of the nation in following countries

Share of Ulaanbaatar, 2010

Heavy concentration of population and economic activities in the city center

Source: Population and Housing Census 2010

Source: Revision of Ulaanbaatar City Master Plan by 2030
The most challenging issue of Ulaanbaatar city to change ger areas into built-up area

- Totally 272’103 households live in the city and 154’862 (57%) households live in the ger areas.
- Burning raw coal in the normal stove becomes the heating resource in winter season and it extricates huge amount of pollution.
- The ger area is not provided by sewage system and the ground water pollution originates from using natural pit toilet.
Problems

- Air pollution and pollen
- Groundwater pollution
- Soil contamination
- The city capacity is overlapped by the influence of exceedingly urbanization
- Shortage of energy supply
- Traffic congestion
Air Pollution Reason

- Sulfur dioxide (SO2)
- Nitrogen dioxide (NO2)
- Carbonic oxide (CO)
- Particulate matter (PM10)

The retained volume in air of those harmful substances which pollutes the air are 1.2 - 5.2 times more than the standard volume.
The condition of flood risk and affecting factors

- 14 times of thunderstorms and downhill floods - death of 15 people.
- Reasons of increasing the risk of flood:
  - The frequency of risk of flood
  - Climate change
  - Environmental pollution
  - Rise of the population in the area of ecosystem
  - Centralization and urbanization
  - Inadequacy of the structure of flood protection and associated system
Challenges and lacks about decreasing danger of a disaster and adjusting to climate change

- Legal environment;
- Structure of urban planning system;
- Cohesion and regulation between related ministries and institutions;
- Source of finance and budget;
- Measuring and controlling of disaster risk and climate change;
- Educational system, trainings and advertisements
Main barriers and drivers: Policies
Related Legislations and Policy Documents (Urban)

- Law on Urban Development
- Law on Legal Status of Towns and Settlements
- Law on the Utilization of Water Supply and Sewerage System in Cities and Settlements
- Law on Legal Status of the Capital City
- Housing Law
- Construction Law
- Package of Land Laws
LEGAL REFORM

1. REVISION

1.1. Law on Land
1.2. Law on Land Fee
1.3. Law on Land Cadastre
1.4. Urban Development Law
1.5. Construction law

2. AMENDMENT

2.1. Law on Geodesy and Cartography
2.2. Law on Land Ownership by the Citizens of Mongolia
2.3. Law on Housing Privatization

3. NEW LEGISLATION

1.1. Law on Land Expropriation
1.2. City Redevelopment Law
1.3. Law on Urban Green Areas
1.4. Law on Parking
1.5. Law on National Geospatial Information Infrastructure
1.6. Zoning Code of Ulaanbaatar city
Related Legislations and Policy Documents (Climate change)

- Law on Air revised (2010, 1995)
- Law on Disaster Prevention, 2003
- National Security Priorities
- The Mongolia Action Programme for the 21st Century (MAP21)
Government Policy Goals and Targets

<table>
<thead>
<tr>
<th>Name</th>
<th>NEW DEVELOPMENT MEDIUM-TERM TARGET PROGRAM (approved by Parliament in 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal of the program</strong></td>
<td>Provide healthy and safe living environment to its people and to foster smooth development through provision of comprehensive resolution to economic and social challenges faced by the country in the way of providing jobs and housing and ensuring urban planning, energy and engineering infrastructure and road network meets the international standards once the nationwide development commences.</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>2010-2016 (to be implemented in 2 phases)</td>
</tr>
</tbody>
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<tr>
<th>Name</th>
<th>NATIONAL ACTION PROGRAM ON CLIMATE CHANGE (approved by Parliament in 2011)</th>
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<td><strong>Goal of the program</strong></td>
<td>Ensure ecological balances, development of socio economic sectors adapted to climate change, reducing of vulnerabilities and risks, mitigating the GHG emissions and promoting economic effectiveness and efficiencies and implementation of Green development goals.</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>2011-2021 (to be implemented in 2 phases)</td>
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</tbody>
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<tr>
<th>Name</th>
<th>GREEN DEVELOPMENT POLICY (Approved by Parliament in 2014)</th>
</tr>
</thead>
<tbody>
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<td><strong>Goal of the program</strong></td>
<td>Evolve as an advanced nation having built conditions for environmental sustainability to be inherited by future generations and with an opportunity of gaining benefits from it in the long-run through participatory and inclusive economic growth based on green development concept.</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>2014-2030 (to be implemented in 2 phases)</td>
</tr>
</tbody>
</table>
New development work being flourished the works as the “Cities”, “New Ulaanbaatar – Green City”, “Housing”, “A Hundred thousand Housing”, “Construction material producing factory”, have been integrated in the “New Development” midterm target program.

By implementing “A Hundred thousand Housing”, project to 2016 with two phases not only will fulfill the goal to increase the housing supply for the population, but also it will create workplaces for the low and medium income citizens, increase building construction industry and construction material national manufacturing, introducing new techniques and technologies, training of skilled workers in the construction field, develop securities structure secured by real asset, immovable properties, create long term soft loan for housing, air and soil pollution decrease etc many issues will be solved.
The following actions shall be taken in order to achieve the objectives of the program:

Under the objective of urban development and planning:
- to amend and implement the Master plans of cities and regional pillar centers for up to 2020; draft Master plan for up to 2030 considering the land management, housing, earthquake zones, and rationalized public transport network;

- to make the state, regional, aimag and soum land management plan consistent with other relevant policy documents, develop environmentally friendly, cost effective land management plans that accelerate economic development and ensure compliance;
to relocate factories that cause adverse impact on the environment, special object, universities and colleges to a new location outside the city;

to develop and implement new land management plan for ger districts of Ulaanbaatar city;

to revise and develop legislation, regulation, norms and normative, standards required for implementation of urban development and planning policies;

urban development and planning shall be planned in line with international standards, while taking into account the engineering facilities, public transport, air transport, public utilities, housing, ger districts, social infrastructures and access to land;

to plan and develop new towns and settlement based on mines and processing factories;
New Development Medium-Term Target Program

Infrastructure:
- Establish an independent and centralized power source at Ulaanbaatar city, regional pillars and aimags;
- Connect the aimag centers with central power grid, introduce new equipment and technologies of renewable energy;
- Reduce heat losses of building and facilities;
- Build or upgrade sanitation and treatment facilities at Ulaanbaatar city and aimags;
- Upgrade Ulaanbaatar city’s road, establish new road network to connect all public and international roads with aimag centers, aimag centers with border checkpoints;
- Establish new sources of underground and pure water supply.
"100,000 Housing Units" Project Of which 1000 housing units in each province

Implementation phases:  
1st phase: 2010-2012  
2nd phase: 2013-2016

75000 housing unit will construct in the Ulaanbaatar city

25000 housing unit will construct in the local area.
“1000 Housing Unit in Each Aimag” project
Housing Area Development Master Plan for 10 aimags will be completed in 2013 with state budget funding.
Following up Government Resolution #138 of 2011:
• 1150 citizens obtained in 2012 mortgage loan of MNT50 bln (USD37.7 mln) with 6 percent annual interest rate, and
• Joint Decree # A-2/06 dated 09 Jan 2013 by the Governor of the Mongol Bank and the Minister of Construction and Urban Development approved issue of MNT800bln (USD571.4 mln) worth bond for funding the long-term program on “Developing Long-term Sustainable Housing Finance System”.

Mortgage loans granted:

Preferred floor area by the borrowers (in m²)

Borrowers applied for housing mortgage loan (in UB and rural areas)
Public utilities

Reform policy in public utilities sector

- Capacity increase by new development or rehabilitation of utility networks to serve 1000 housing units to be built in aimag centers.
- Construction of water supply and sewerage system, small-scale waste water treatment plants and water kiosks in ger areas of Ulaanbaatar and aimag centers, connection thereof with centralized system.
- Installation of domestic hot water pipelines in residential buildings in aimag centers;
- Renovation or construction of flood protection damn and culverts in Ulaanbaatar, aimag centers and major towns.
- Development of database for utility networks and facilities for mitigating earthquake disaster;
- Approval and application of codes and norms on re-use of gray water;
- Introduction of tunnel system for underground pipeline networks in the sections with most intensive traffic in Ulaanbaatar and aimag centers; and
- Provision of Public Utility Service Organizations with machinery and mobile laboratories for analyzing potable and waste water.
Revision of “Ulaanbaatar city Master Plan 2020” and Development concept till 2030

- Approved by Parliament in 2013
- Drafting implementation plan under the JICA assistance
Urban Development and Re-development of Ger Area
In the first phase (2011-2016), national mitigation and adaptation capacities will be strengthened, legal, structural and management systems will be set up and community and public participation will be improved.

In the second phase (2017-2021), climate change adaptation measures will be implemented and start up greenhouse gas mitigation actions.

1. Establish the legal environment, structures, institutions and regulatory framework supporting the activities directed to solve the issues due to climate change.

2. Ensure environmental sustainability and reduce socio-economic vulnerabilities and risks through strengthening national capacity to adapt to climate change.

3. Mitigate greenhouse gas emissions and establish a low carbon economy through the introduction of environmentally-friendly technologies and improvement of efficiency and productivity in production and consumption.

4. Expand national climate observation network, research and assessment works, reform technologies and strengthen the capacity of human resources.

5. Conduct public awareness raising activities and support citizen and communities in participating climate change mitigation and adaptation actions.

National Action Programme on Climate Change (NAPCC)
INCREASE UTILIZATION OF RENEWABLE ENERGY

Mongolia has extensive renewable energy resources (solar, wind...) yet to be utilized.

An annual average amount of solar energy is 1,400 kWh/m2/y with solar intensity of 4.3-4.7 kWh/m2 per day.

Mongolia has potential to be a major wind power producer. Mongolia has enormous wind power resources; Good-to-excellent wind resources equivalent to 1,100 GW of wind electric potential.

Source: U.S. Department of Energy
The Swedish Energy Agency and Clean Energy LLC have signed an agreement for the transaction of approximately 600,000 Certified Emission Reductions (CERs) generated by the Kyoto Protocol Clean Development Mechanism (CDM) project Salkhit Wind Farm, the fourth CDM project and the first wind power project to be registered in Mongolia.
“Solar house” at Khustai nuruu

- Solar energy use for heating and electricity
- 420 square meter, 2-floor building for research, training, office rooms and meeting hall with 5-6 cars underground garage.
- 20 piece of solar vacuum collector with heating pipeline
- Currently it is in operation
Smart house

Building of Ministry of Environment, Green Development and Tourism

Smart and eco house
First Mongolian “0” emission office building

Green technology
Current status of JCM in Mongolia

Road to “LCDP”

Governmental consultation
(Ulaanbaatar - 3 July 2012)

Governmental consultation
(Tokyo -1 November 2012)

Governmental consultation
(Doha -30 November 2012)

Joint Statement
(Doha -6 December 2012)

Signing of the “Low Carbon Development Partnership” (bilateral document for the JCM)
(Ulaanbaatar- 8 January 2013)

Start of “JCM”

JCM first Joint Committee meeting
(Ulaanbaatar - 11 April 2013)

JCM second Joint Committee meeting
(Ulaanbaatar - 20 February 2014)

Joint Committee
Mongolia
Co-Chair
Members (7 Ministries and UB City Authority)
Secretariat
Observers

Japan
Co-Chair
Members (2 Ministries and Japanese Embassy in Mongolia)
Secretariat
Observers
1. Promote resource efficient, low greenhouse gas emission and wasteless production and services.

2. Preserve ecosystem balance through intensification of environmental protection and restoration activities and reducing environmental pollution and degradation.

3. Introduction of financing, tax, lending and other optimal incentives for supporting green economy and increasing investments to promote environmental protection, human development and clean technologies.

4. Promotion of green employment, poverty reduction and engraining/promoting green life style.

5. Promotion of “Live in harmony with nature” living and culture values and make education, science and innovation as catalysts for green development.

6. Develop and implement population settlement plan in accordance with climate change, availability of natural and other resources in regions and restoration capacity.

6 strategic objectives

➢ In the first phase (2014-2020): Create green development models and norms in all economic and social sectors, and legal framework to ensure green development to enhance long-term sustainable economic development.

➢ In the second phase (2017-2021), Green economic, socially equitable, inclusive and highly efficient development system will be established.
# Challenges for Urban Development

## Human capacity
- Lack of urban planning specialists;
- Due attention is not given to the urban planning at both community and Government levels.

## Land management
- Land ownership preceded the planning process, causing informal settlement and unplanned construction
- Land Management Master Plans are lagging behind of Urban Development Master Plans.

## Economic issues
- Uncoordinated activities between the financial and construction sectors
- Lack of advanced economic management method results in inefficient or poor quality of constructions

## Environment and ecology
- Air pollution due to smoke generated by the increasingly expanded ger areas.
- Urban green plantation per person is 5 times lower than international standard
- The land plots for development purposes are being awarded destroying existing green areas
## Ways to address the challenges

### Urban governance
- Bottom-up approach with high professional participation is needed in the sector.

### Improving urban planning efforts and strengthening capacities
- Consider in the Cities’ Master Plans the current rapid socio-economic changes
- Advance methodology and standards of urban planning
- Training and re-training of the urban planners and specialists;

### Land and Urban Development
- Create an unified database on construction, urban planning, land management, land ownership,
- Create bureaucracy-free access to the coordination of urban development zoning and land management.

### Economy and Urbanization
- Improve coordination between financial and construction sectors

### Environment and Ecology
- Develop management for protection of river basins and places of natural beauty
Policies and strategies on urban development

- Development of State Policy on Urban Development and its approval by the Parliament.
- General development project on settlement and residence of the population of Mongolia
- Establishment of Urban Development integrated Information System
- City planning of all provincial (aimag), sub-provincial (soum) centers and satellites cities - aimag centers with population of 15,000 and above more that this number will be accounted as the national status cities will be newly made. 2013-2015
- Designing and implementation of ger area and subdistricts redevelopment projects in 12+8 locations in Ulaanbaatar
- “1000 housing project” in each aimag
- Rental and Private housing programmes
- Implementation of mortgage loan with 8% interest rate for housing to every body who has a job
- 100 soums public utility facilities will be developed within “Soum project” implementation during 2013-2016
General development project on settlement and residence of the population
Master Plan for the New International Airport in the Khushig Valley and Development of New City
Developing satellite cities – to decentralize UB population

Sustainable eko city masterplan such as “Maidar Eko City“
Smart City Concept & Direction

City + Smart = Make Smarter & Sustainable City
→ Urban Competitiveness

Make City Smarter

Managing Complexity  Increase Efficiency  Reduce Expenses  Improve Quality of Life
Future cities

Sustainable
- Recycling / reuse the waste
- Renewable energy
- Electric cars
- Bycicle
Thank You for Your Attention

Contact details:

- The Ministry of Construction and Urban Development
- Agency of Land Administration, Geodesy and Cartography

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