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Citywide Pro-Poor Ger Area Upgrading Strategy of Ulaanbaatar City

Citywide Pro-poor "Ger-area Upgrading Strategy and Investment Plan" (GUSIP) of Ulaanbaatar City

Prepared under Citywide Pro-poor "Ger-area Upgrading Strategy and Investment Plan" (GUSIP) of Ulaanbaatar City, implemented by the Municipality of Ulaanbaatar with technical and financial assistance of UN-HABITAT Regional Office for Asia and the Pacific, and financial assistance provided by Cities Alliance Trust Fund.

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Citywide Pro-Poor Ger Area Upgrading Strategy of Ulaanbaatar City

(Output 1.6)

July 2010 (Final)

Prepared under

Citywide Pro-poor
"Ger-area Upgrading Strategy and Investment Plan" (GUSIP)
of Ulaanbaatar City

About the
Citywide Pro-poor Ger-area Upgrading Strategy of Ulaanbaatar City

In recent years, Ger area population in Ulaanbaatar has grown rapidly. Although over 50% of the population resides in Ger areas, these traditional settlements are not recognised as a formal part of the city. They are viewed only as temporary settlements. The informal status of Ger areas is rooted in the lack of appropriate laws, and urban development policies and regulations for the improvement of Ger areas. This has resulted in unplanned and haphazard expansion of Ger areas, especially since the mid-1990s. The lack of basic urban services and infrastructure in Ger areas has become a major source of urban environmental problems such as air, water and soil pollution and the Ger area residents suffer from poor living conditions.

The Citywide Pro-poor Ger-area Upgrading Strategy of Ulaanbaatar City (GUS) was developed through a structured consultative process, involving over 20 professional institutions (departments, divisions and agencies). These included the Municipality of Ulaanbaatar, *Duureg* (District) and *Khoroo* (Sub-District) Councils, Ministry of Construction and Urban Development, and Mongolia Association of Urban Centres. The process also included participation of Ger area communities, private sector agencies, civil society organizations and non-governmental organizations, academic and training institutions, UN agencies and international aid agencies focusing on Ger area upgrading and development.

The GUS identifies and focuses on three types of Ger areas in Ulaanbaatar, that is, Central, Middle and Peri-urban Ger areas. The process involved the analysis of the various upgrading and development issues faced by the Ger areas[1]. The three Ger-area specific Visions, Strategic Goals, Objectives, and Main Strategic Components were also developed through a consultative manner.

The GUS is structured at two levels: the first defines the strategic directions for the upgrading and development for all three types of Ger areas; and the second defines strategic recommendations.

[1] These issues are analyzed in the City Environment and Development Review; Service Distribution and Infrastructure Review; Urban Poverty Profile; Community Organization Inventory; and Land Planning and Development Review.

FOREWORD

The Ger areas, where over 60 percent of Ulaanbaatar city's population lives now, are an integral part of the urban social fabric. Ger areas pose unprecedented development challenges given their location, low population density and unique urban morphology. Therefore, a strategic development approach is required for sustainable improvements in the quality of life of Ger area residents.

The implementation of the Citywide Pro-poor 'Ger-area Upgrading Strategy and Investment Plan' (GUSIP) of Ulaanbaatar City was led by the Municipality of Ulaanbaatar. The Ministry of Road, Transportation, Construction and Urban Development and the Mongolian Association of Urban Centres were the key national partners of the Municipality. The United Nations Human Settlements Programme (UN-HABITAT) provided the comprehensive technical support for the successful completion of the GUSIP project.

Cities Alliance and UN-HABITAT provided financial assistance for GUSIP. As members of Cities Alliance, the World Bank, the Asian Development Bank, and the Governments of France, Japan and the Netherlands co-sponsored the project.

The structured consultative process adopted under GUSIP involved key local, national and international stakeholders, and was instrumental in the participatory development of the Citywide Pro-poor Ger-area Upgrading Strategy of Ulaanbaatar City. The process included the systematic assessment of development issues in the Central, Middle and Peri-urban Ger areas, analysis and adaptation of various urban upgrading approaches to Ger area conditions, and the formulation of Ger area-specific strategic options and recommendations. It has contributed to a shared understanding of the problems as well as possible solutions that can sustainably improve the quality of life in Ger areas and environmental conditions of the city.

In June 2007, the Mayor's Council approved the Citywide Pro-poor Ger-area Upgrading Strategy of Ulaanbaatar City. Following this and in July 2007, the Ulaanbaatar City Citizens' Representatives Council adopted the Strategy for its implementation. Since then, the Strategy has been guiding the design and implementation of national and international programmes and projects for the upgrading and development of Ger areas.

The various reviews, guidelines, action plans and toolkits developed under GUSIP constitute valuable contributions to the Municipality of Ulaanbaatar, government organizations and development agencies involved in improving the quality of life and environmental conditions in Ger areas.

I would like to convey my appreciation and grateful thanks to all our partners for sharing their expertise and sense of vision with us during the design and implementation of the GUSIP project.

Munkhbayar Gombosuren

Capital City Governor and Mayor of Ulaanbaatar

PREFACE

This strategic document is the first Citywide Pro-poor Ger-area Upgrading Strategy of Ulaanbaatar city. It has been developed under the Citywide Pro-poor Ger-area Upgrading Strategy and Investment Plan (GUSIP) for Ulaanbaatar project, which is being implemented by the Municipality of Ulaanbaatar, with technical and financial assistance of UN-HABITAT Regional Office for Asia and the Pacific, based in Fukuoka, Japan, and financial assistance from the Cities Alliance Trust Fund, based in Washington DC, USA.

The first Citywide Pro-poor Ger-area Upgrading Strategy of Ulaanbaatar city was discussed and approved by the Mayor's Council in June 2007.

The Citizens' Representatives Council of Ulaanbaatar City discussed and approved the first Citywide Pro-poor Ger-area Upgrading Strategy of Ulaanbaatar city for its implementation on 4 July 2007.

The preparation of the first Citywide Pro-poor Ger-area Upgrading Strategy of Ulaanbaatar City was supported by a Project Team led by Dr. Bharat Dahiya, Human Settlements Officer, based at UN-HABITAT Regional Office for Asia and the Pacific. In Ulaanbaatar, Ms. Enkhtsetseg Shagdarsuren managed the Project Support Team.

Resolution of the Leaders of
Capital City Citizens Representatives Khural

4th July, 2007 No.132 Ulaanbaatar City

On Approval of "Ger area upgrading strategy"

As per Article 8 of the Law on Authority of Capital city and provision 1 under Article 25 of Law on Administrative and Territorial Units and their administration, the Leaders of Capital City Citizen's Representatives Khural RESOLVES that:

One: The Ger Area Upgrading Strategy of Ulaanbaatar city shall be approved for its implementation as in the Annex attached herewith and,

Two: Assign the Capital City Governor and Ulaanbaatar City Mayor /Ts. Batbayar/ to implement the Ger Area Upgrading strategy of Ulaanbaatar city in coherence with Urban Development Master Plan and Land Management Plan of capital city through preparation of financial and foreign investment plan.

Three: Recommend the UN-HABITAT Regional Office for Asia and the Pacific to provide technical assistance and investment sources for implementation of the Strategy and work in close cooperation with the Municipality.

Ms. N.Bolormaa

Head of Ulaanbaatar City Citizen's Representatives Khural

(Official Stamp)

ACKNOWLEDGEMENTS

The *Citywide Pro-poor 'Ger-area Upgrading Strategy and Investment Plan'* (GUSIP) was implemented by the Municipality of Ulaanbaatar (MUB) with technical support by the United Nations Human Settlements Programme (UN-HABITAT). The Ministry of Road, Transportation, Construction and Urban Development (MRTCUD, and previously the Ministry of Construction and Urban Development) and the Mongolian Association of Urban Centers (MAUC) were the key national partners. In addition to the Municipality's Departments and Divisions, District and *Khoroo* Officials, the representatives of Ger area residents, the private sector, civil society organizations and NGOs, academic institutions, specialized agencies (such as Mongolian Housing Corporation) and the project offices of various bilateral and multilateral aid agencies supported GUSIP's implementation.

Six members of Cities Alliance, UN-HABITAT, the World Bank, the Asian Development Bank, and the Governments of France, Japan and the Netherlands, co-sponsored the project. Cities Alliance and UN-HABITAT provided financial assistance for GUSIP's implementation.

The GUSIP project could not be completed successfully without the invaluable contributions of the many individuals, as follows:

- *Municipality of Ulaanbaatar*: Mayor Mr. Munkhbayar; former Mayors Mr. Bilegt, Mr. Batbayar and Mr. Enkhbold; Vice Mayor Mr. Baatarzorig; Vice Mayor Mr. Munkhbaatar; General Manager Mr. Choimpog Bat; Mr. G. Nandinjargal, Head, Urban Development Policy Department; Mr. Tumurkhuyag, Head (former) and Mr. Saandui, Head, Land Administration Department; Mr. Bold, former Director of Urban Planning, Research and Design Institute; Mr. Natsagdorj, Chief Architect and Head of Urban Development Department; Ms. S. Tumurdulam, Head, Urban Planning & Information Technology Division, Urban Development Department
- *Ministry of Road, Transportation, Construction and Urban Development*: Minister Mr. Kh. Battulga; former Ministers Dr. Ts. Tsolmon, Mr. Narantsatsralt and Mr. Batbayar; Dr. Ochirbat, Head, Land and Urban Development Policy Department
- *Mongolian Association of Urban Centers*: Executive Directors, Ms. Sh. Tserendulam and Ms. A. Zulgerel (past)
- *Mongolian University of Science and Technology*: Dr. Otgonbayar, Professor and Director; Dr. Altantuul, Professor; Mr. Purev-Erdene, Lecturer, of the School of Construction, Engineering and Architecture
- *Others* Ms. Badamkhorloo, Director of USIP2 PMU; Mr. B. Battsend, Project Coordinator of 14th Housing Area project of the MRTCUD, Mr.Khurelshagai, Executive Director of Beren Construction Company and Mr.T.Erdenebayar, Executive Director, Mongolian National Construction Association.

Technical Advice and Support:

GUSIP project was conceptualised and designed by Dr. Bharat Dahiya, Human Settlements Officer, and Mr. Chris Radford, Senior Human Settlements Officer, of UN-HABITAT, who also provided technical support for its implementation. Special thanks to Dr. Hubert Jenny, Senior Municipal Engineer, the World Bank (currently with the Asian Development Bank), who provided valuable inputs to the GUSIP project design. Technical support was also provided by Mr. Bruno Dercon, Human Settlements Officer, Mr. Bijay Karmacharya, Chief Technical Adviser, and Ms. Enkhtsetseg Shagdarsuren, National Project Manager. Project Management Team support was provided by Ms. Udval Otgonbayar, Administrative and Financial Officer, and the UN-HABITAT Mongolia Team.

For this report, Output 1.6: Upgrading Strategy, substantive contribution was made by Bharat Dahiya and Enkhtsetseg Shagdarsuren.

Ulaanbaatar City, December 2010

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In recent years, Mongolia has been experiencing rapid urbanisation. For the first time in the country's history, about 60% of Mongolia's population lives in cities and towns located in the 21 *Aimag*s (provinces). In addition, for the first time in history, more than 50% of Mongolia's population now resides in the capital city, Ulaanbaatar.

During the 70 years of Socialist Rule, Mongolia consolidated its urbanisation process through redevelopment (as in case of Ulaanbaatar) and the establishment of new cities and towns (e.g. Darkhan and Erdenet). This included construction of modern government buildings, residential apartment blocks, and in several cases – commercial and industrial buildings, which now form the "built-up core" of almost all cities and towns. These city-cores are served by infrastructure such as water supply network, heating supply network, power/electricity supply network, services such as solid waste collection, and (in some cases) sewerage network. Beyond the built-up core, the urban morphology of all cities includes Ger-areas, which are low-density informal settlements, comprise primarily of traditional houses built within individual fenced plots called *Khashaas*. Ger-areas have limited infrastructure and services such as water supply through kiosks and power/electricity supply. For sanitation, the *Ger area* residents rely on pit-latrines that are dug within individual *khashaas*. They use household-level coal-fired heating-cum-cooking stoves to protect themselves through extremely harsh winters.

Since time immemorial, *Ger* (traditional felt-tent houses) and *Ger-areas* have been at the centre-stage of Mongolian settlements and urbanisation[2], and a pride of Mongolian culture. Historical evidence suggests that until the 1920s, Mongolian urban settlements comprised mainly of Ger-areas. Following the fall of Soviet Union and the related changes in the Mongolian political economy, the country started to undergo unprecedented changes in early 1990s. Smaller towns and cities started to lose population to larger cities as their erstwhile-protected (socialist) economies deteriorated, a trend that continues. Following the Supreme Court's decision (made in late-2003) on the free movement of population within the country, an increased number of households started to migrate to Ulaanbaatar from various *Aimags*, often by-passing the secondary cities that lay in-between[3]. In early 2004, the in-migration rate to Ulaanbaatar city was estimated at one household per hour[4]; most of this migrated population from the countryside has found land at the periphery of the city, and housed itself in its Ger-areas. The result is that the urban area of Ulaanbaatar city which was 6,470 hectares in early 1990s, expanded to 14,011 hectares in 2006[5]; in other words, in 16 years time the urban area more than doubled (an increase of 116.5%) during this period, and over 57% of Ulaanbaatar's residents lived in Ger-areas in 2006[6].

1.1 Factors Affecting Development in Ger Areas

1. *Lacking legal recognition as an integral part of urban settlements*. In recent years, the proportion of urban population living in Ger areas has increased. Although more than 50% of Mongolia's urban population lives in Ger areas, they are not legally recognised as part of the planned urban centres.

2. *Lack of Planning for the Upgrading and Development of Ger Areas*. Even in 2010, there are no laws or regulations that support planning for the development and upgrading of Ger areas. As a result, city master plans pay little attention to Ger area upgrading or improvement. Instead, master plans prescribe redevelopment of these areas with little follow up action or investments. Moreover, efforts are required for planning the layout of Ger areas so that new in-migrants who come to Ulaanbaatar to settle can erect their *khashaas* and start living therein.

3. *Ad hoc Land Management*. Due to the lack of spatial planning inputs to Ger areas, land administration departments of local governments are faced with the ad hoc land management. For

[2] D.Maidar, L.Darisuren, "Ger", 1976.

[3] MoLSW, UNDP and PTRC, 2004. *Urban Poverty and In-migration: Survey Report*, Ministry of Labour and Social Welfare, United Nations Development Programme and Population Teaching and Research Centre, Ulaanbaatar.

[4] Urban Development Policy and Planning Department, Municipality of Ulaanbaatar (April 2004).

[5] Calculations were based on the maps developed by "Cadastral mapping and Land registration" project funded by ADB.

[6] Urban Development Policy and Planning Department, Municipality of Ulaanbaatar (March 2006).

instance, Ulaanbaatar has experienced in-migration for many years and due to lack of any advance land planning, the problem of *ad hoc* land management manifests at two levels: (a) At the Sub-District (*Khoroo*) level, the *Khoroo* administration allocates land randomly at the periphery of Ger areas to new in-migrants. This has resulted in the haphazard growth and expansion of Ger areas. (b) At the city-level, the land administration departments are faced with allocation of land at either the periphery of Ger areas or where habitable land is available further away from the city. Land allowance of up 700 sqm/household has led to the rapid expansion of Ger areas. According to the statistics of January 2007, 89% of the Ger area households have privatized their land.

4. *Lack of Adequate Investment*. The upgrading and development of Ger areas requires a lot of investment. Data of 2000-2006 shows that there has been little or no investment in infrastructure development and basic services by the public sector.

5. *Inadequate Provision of Infrastructure and Basic Urban Services*. Urbanisation has outpaced the provision of infrastructure and basic urban services to the urban poor who increasingly live in Ger areas. Owing to limited access of *Ger* area residents to basic urban services and infrastructure, the living conditions or "quality of life" in these informal settlements is poor. The number of households who use water from insecure sources is 30 times higher in Ger areas than in apartments, and almost all Ger residents (97.3%) use pit latrines[7].

6. *Growing Urban Environmental Problems*. Urban poverty and deficiencies related to basic urban services and infrastructure are accompanied by environmental problems of air quality, water contamination and land degradation. Air pollution is the most visible and widely known environmental problem in the urban areas of Mongolia, which rely on thermal power plants for electricity production and centralized heating boilers. This is exacerbated in winters by inefficient coal and wood-fired cooking-and-heating stoves in households in *Ger* areas. Emissions resulting from incomplete combustion in these stoves not only results in indoor air pollution but also in outdoor/ambient air pollution, that affects the entire population of the city. The rapid increase in vehicle ownership adds a further dimension to an already complex environmental issue. According to a study carried out by the Central Laboratory for Environmental Monitoring, air pollution in Ulaanbaatar during winter is 2.5 times the permitted rate for carbon dioxide and nitrogen dioxide.

   While the unplanned and haphazard growth of Ger areas adds to urban and regional environmental problems, Ger area residents adversely contribute to them. For example, since many Ger area households cannot afford coal for winter heating and cooking, it results in extensive over-exploitation of surrounding fuel-wood resources. This has increased surface water run-off during snowmelt, associated with erosion and flood hazards. All these require improved urban environmental planning and management and preventive measures.

   Another urban environmental (or public health) problem in Ger areas is related to poor solid waste collection owing to infrequent (once a month) waste collection. The problem is compounded by the disposal of night soil with garbage by residents of apartments that are not connected to sewerage system[8].

7. *Urban Poverty and Ger Areas*. Poverty is higher among Ger area residents in Ulaanbaatar, with 47% of Ger residents being poor against 15% of apartment residents.

8. *Limited Experience in Modern Methods in Urban Governance and Management*. Municipality of Ulaanbaatar has limited experience in working with contemporary methods of urban governance and management, which involve participatory decision-making. Through the "enabling role" of local government, modern and innovative ways for improving urban governance and management need to be experimented with and adapted. This would include the establishing of institutional frameworks

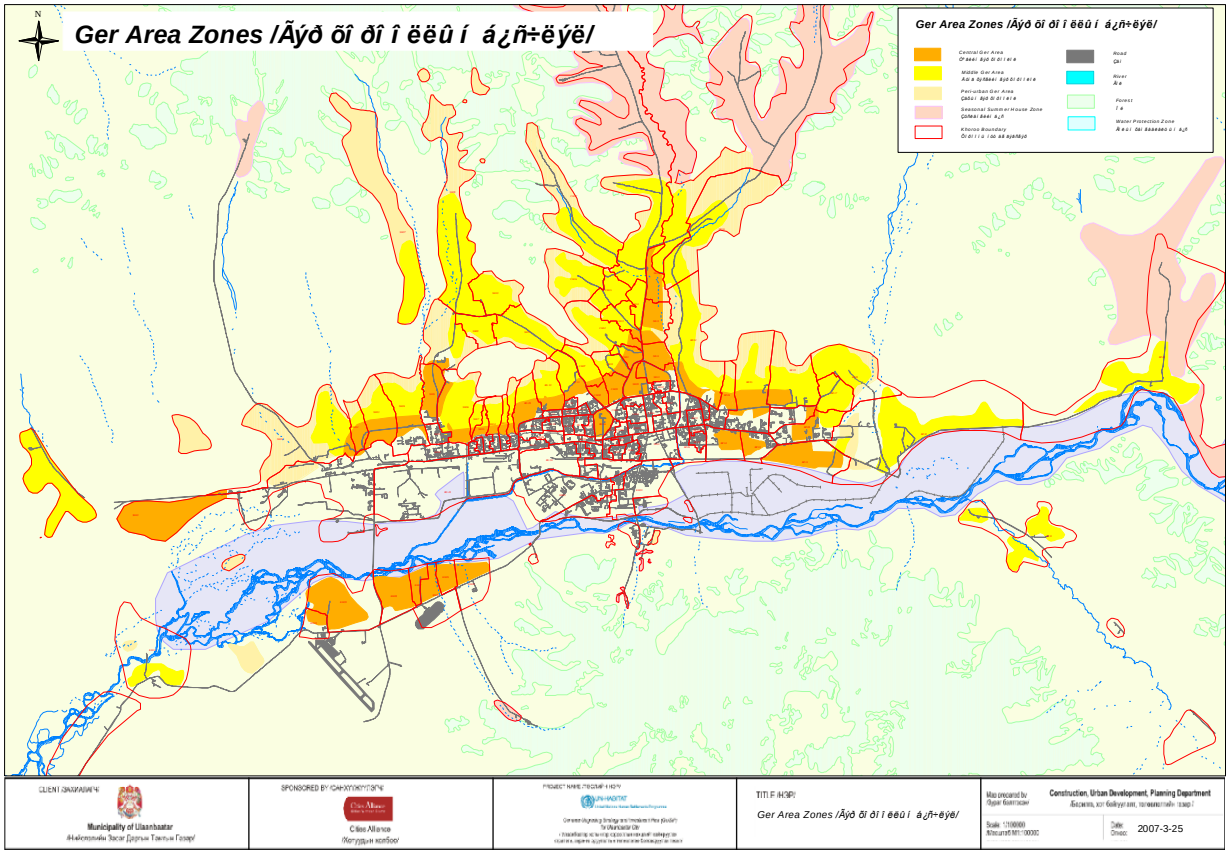
[7] MoLSW, UNDP and PTRC, 2004.

[8] See various Newsletters of "The Study on Solid Waste Management Plan for Ulaanbaatar City in Mongolia" prepared by JICA (Volume 1 to 7).

for the involvement of civil society organisations[9] and private sector in urban development, for example for construction, operation and maintenance of infrastructure and provision of urban services. The process was started with the preparation of "Urban Governance Index" for Ulaanbaatar with the assistance of UN-HABITAT[10].

9. *Limited Institutional Capacities*. With regard to Ger area upgrading and development, local governments (at city, district and sub-district levels), urban planning institutions, universities and training institutions and NGOs in Ulaanbaatar have limited experience.

Map 1: Ger Area Zones in Ulaanbaatar



[9] These often include community-based organisations (CBOs), self-help groups, saving and credit groups, NGOs, and research and training institutions.

[10] Mongolia: Capital City Ulaanbaatar - Urban Governance Index, Workshop Report, February 2006

2 Development Issues

There are three types of Ger areas, namely Central, Middle and Peri-urban Ger areas. Development issues for these areas have been identified based on detailed studies of the peculiarities, environment, land management and development constraints, and developmental context of the Ger areas (see Figure 1 below).

1) *Central Ger Areas* are located around the city's built-up core, where potentially high access to water, roads and solid waste collection services is at its highest;

2) *Middle Ger Areas* are located around Central Ger Areas, which depend on water from tankers and 'older' pit latrines; have meandering streets and difficult access, and high risks of flooding in some areas due to lack of drainage facilities and steep slopes;

3) *Peri-Urban Ger Areas* are located around Middle Ger Areas, that are expanding at an accelerating rate but lack any subdivision guidance or layouts. They are often built on/ along hazardous sites (high-tension power lines, natural drainage channels, steep slopes, etc); and are a threat to natural resources (water aquifers). Being farthest from the primary infrastructure and services, these areas are the most lacking in service provision and have to rely on tanker water supply and simple pit latrines;

The biggest development challenge for ***Central Ger areas*** is to accommodate the increasing demand for developed land for new apartment blocks, commercial and institutional needs (as incomes grow in Ulaanbaatar and Mongolia) through consolidation of Ger plots, expansion of trunk infrastructure and core built-up city's expansion.

The development challenge for ***Middle Ger areas*** is to improve the distribution of infrastructure and basic urban services through increase in population density and proper land allocation.

The development challenge for ***Peri-urban Ger areas*** is to improve people's quality of life through the better provision of infrastructure and basic urban services in such a widespread area through planned settlement expansion for the in-migrants from countryside and other cities/towns.

2.1 Development options

1) *Maintain Status Quo*. Let the capital city and its Ger areas grow without proper planning as it has been in the recent years.

2) *Continuation of the Socialist Model*. Redevelopment of Ger areas with the resources available from the public sector.

3) *Foster Partnerships with Stakeholders*. Upgrading and development of Ger areas in a systematic manner by fostering partnerships between the public sector, private sector and civil society organisations (including Community-Based Organisations; academic, training and professional institutions and NGOs) for resource mobilisation, building on local knowledge, and using experience gained in urban development over the past 10 to 15 years.

3 Vision

1. *Central Ger area:* High density constructed area consisting of residential, commercial and institutional land use with comprehensive urban infrastructure and service provision.

2. *Middle Ger area*: Mixed land use with low-rise private housing and Ger areas with comfortable living conditions.

3. *Peri-urban Ger area*: Private housing area with comfortable living conditions.

4 Strategic Goals

1. *Central Ger area:* Ger-area "Redevelopment", replacing Ger housing, consolidating Ger plots (*khashaas*) for the construction of new apartment blocks (residential areas), and creation of built (floor) space for commercial and institutional needs.
2. *Middle Ger area:* "Comprehensive Upgrading", including the realignment of Ger plots (*khashaas*) and improvement in the distribution of infrastructure and basic services. This will include varying levels of service provision, and innovative ways to increase population density and reduce the cost of infrastructure and service provision.
3. *Peri-urban Ger area:* A broad strategy of "Incremental Upgrading", including technical assistance to the *Duureg* and *Khoroo* officials for the orderly expansion of these Ger-areas. This would include reservation of land for basic urban services and infrastructure, and incremental provision of infrastructure and basic urban and social services at least cost when the opportunity arises.

5 Main Strategic Components

Ger area upgrading strategy has the following main and sub components:

I. City growth and environmental sustainability
   1. City expansion and its planning and management
   2. Water resources and pollution
   3. Air pollution
   4. Soil erosion and pollution

II. Improvement of Ger areas
   1. Land planning and management
   2. Infrastructure and social services
   3. Urban poverty

III. Urban governance
   1. Municipal-Community partnerships for Ger area upgrading
   2. Fostering partnerships with Private sector
   3. Strengthening municipal finances

6 Strategic Objectives

6.1 City Expansion and Environmental Sustainability

6.1.1 City expansion, planning and management

Issues

The rapid growth of Ger areas in Ulaanbaatar city in recent years has been caused by several factors, including: (i) high levels of in-migration from the countryside to the capital city, (ii) a very high "free" allowance of land (up to 700 sqm) per household, and (iii) the national policy on land privatisation and its proactive implementation which has attracted in-migrants and apartment residents to own land in Ger areas in the capital city.

The rapid growth of Ger areas is characterised by:

i) Uncontrolled spatial expansion on (a) uninhabitable lands (steep slopes, over lands with groundwater aquifers, along natural drainage channels, under high-tension power lines, etc), (b) lands with underground water aquifers, and (c) land reserved for natural resources (such as forests).

ii) Very low population density of spatial growth.

iii) Haphazard expansion resulting in restricted access, and lack of reserved space for public utilities, infrastructure and services due to little land-subdivision or layout planning inputs.

iv) Wherever land-subdivision or layout planning inputs were provided, it has been very difficult to implement the land-use plans given the limited capacity of the offices of the District and *Khoroo* Governors.

Consequences of Unplanned City Growth

i) Ger areas emit a large proportion of the total air pollution in Ulaanbaatar. Ger areas have become the main source of dust, chemical and biological pollutions[11]. The smoke generated from heating-cum-cooking stoves envelopes the city with 0 to 2 metres of thickness in the winters.

ii) Ger areas are the main sources of the water and soil pollution. These pose a serious threat to the pollution of groundwater resources that are the main source of drinking water supply.

iii) Extensive and avoidable consumption of land resources for the low population density expansion, and lack of basic urban services and infrastructure.

iv) Soil erosion resulting in increased surface runoff associated with an increased occurrence of flash floods.

v) Increased vulnerability to fire and other hazards.

Options

1) *Maintain Status Quo*. Let the capital city and its Ger areas grow without proper planning as it has in the recent years. This will lead to irreversible negative environmental impacts such as pollution of groundwater and loss of topsoil.

2) *Continue with Very High Land Allowance*. Allow the city and its Ger areas to grow expansively based on very high land allowance (up to 700 sqm) per household. The consequences would include waste of land resources and lack of infrastructure provision to future residents owing to the lack of investment available for low-density development.

[11] *Air Pollution Reduction Master Plan for Ulaanbaatar city 2007-2020*, Ulaanbaatar.

3) *Planned Expansion of City and its Ger Areas*. Plan the expansion of the city and its Ger area away from natural resource reserves (groundwater, surface water, forests and grasslands), cultural heritage sites, and natural and manmade hazardous zones.

4) *Reduction in Free Land Allowance*. Reduce the current free land allowance per household of up to 700 sqm. For example, the free land allowance was 300 and 400 square metres during the late-1980s and early-1990s respectively.

Strategic principles

1) Future development and expansion of Ulaanbaatar city (including its Ger areas) should be properly planned, which should be directed to inhabitable lands in view of the availability of land and population projections (based on natural increase and in-migration).

2) City expansion should not be allowed on lands with natural resource reserves (such as groundwater aquifers, close to surface water bodies, forests, grasslands, etc), natural heritage areas (such a Bogd Khan Mountain) and natural hazardous zones (over steep slopes, along natural drainage channels, etc).

3) City expansion should not be allowed to take place on and in close proximity to cultural heritage sites (such as *Naadam* Race Course), manmade hazardous areas (such under high-tension power lines, near solid waste disposal sites) and other restricted areas (such as military zones).

Recommendations

1) Plan the city growth and expansion towards the west of the city.

2) Review and reduce the current free land allowance of up to 700 sqm/ household.

3) Review and strengthen the legal framework and institutional arrangements that regulate urban and regional planning of Ulaanbaatar and expansion of its Ger areas.

4) Review and strengthen the legal framework and institutional arrangements that regulate natural resource protection and conservation.

6.1.2 Water Resources and Pollution

Issues

Ulaanbaatar's water supply is based mostly on groundwater resources, which are under threat of pollution from the unplanned expansion of Ger areas. *The Water and Wastewater Master Plan of Ulaanbaatar – 2020 notes that the current identified sources will be able to provide water for the city until 2012.* This is due to: (i) the limited availability of water resources; (ii) rapid growth of the city's population; and (iii) planned redevelopment of Ger areas into apartment blocks, which will lead to increased demand for water supply. Therefore, ***the protection of water resources is critical for the sustainability of the water supply system and for survival of Ulaanbaatar city***.

Groundwater Resources. In Ulaanbaatar city area, groundwater resources, including aquifers, are located mainly towards East. In recent years, Ger areas in the city have expanded mainly towards East, North, West and Southwest. With the proliferation of unlined simple pit-latrines by the poor in Ger areas, large amounts of pollutants are released into the ground. These are a serious threat to groundwater pollution and to future water supply for the city.

Surface Water Resources. Tuul River is an important source of water supply to the city. Although the alluvial aquifer of the river is extremely vulnerable, the level of pollution is relatively low at present. The water quality is good upstream but deteriorates downstream because of pollutants, including those released from the wastewater treatment plants. The highest pollution is downstream between Bio-combinat and Shuvuu Fabric. The level of pollution reduces beyond Shuvuu. Levels of phosphorus, nitrates and ammonia are increasing in the middle portion or in the section that runs along the city.

Options

1) Protect groundwater and surface water resources;

2) Plan and manage the direction of city growth away from groundwater resources;

3) Pay high cost of infrastructure to build a dam on Tuul River. However there are issues related to the wide river valley, steppe landscape and soil characteristics, and

4) Pay high cost of infrastructure to bring water from a distant "fifth" source. This may be inevitable after 2012 as per estimates.

Strategic principles

Groundwater Resources

1) Identify groundwater aquifers and protection zones, and restrict urban expansion and dumping of solid/ hazardous waste and disposal of wastewater;

2) Promote ecologically safe toilets to prevent future groundwater pollution;

3) Review and strengthen legal frameworks and institutional arrangements that regulate the protection of groundwater resources, and

4) Conduct groundwater source studies for identifying ground water sources near the peri-urban Ger areas.

Surface Water Resources

1) Although the borehole protection policy and its implementation (fences and ban on construction of houses, factories, etc) with regard to Tuul River are efficient, they need to be maintained and continued[12].

2) Review and strengthen legal frameworks and institutional arrangements that regulate the protection of surface water resources.

3) Protect surface water in Tuul River and its tributaries from pollution through the proper collection of wastewater (including industrial wastewater discharge) by extending the wastewater collection network, and upgrading and expansion of existing ones and construction of new wastewater treatment plants.

4) Identify surface water protection zones, and restrict urban expansion and dumping of solid/ hazardous waste in these zones.

5) Implement projects for increasing the water resources of Tuul, Selbe, Dund, Uliastai and Tolgoit rivers and protect their upstream areas and basins.

6.1.3 Air Pollution

Issues

Ulaanbaatar has experienced unprecedented increase in air pollution due to the rapid demographic growth and spatial expansion of Ger areas. The main sources of air pollution are the cooking-cum-heating household stoves used by Ger area residents (estimated at 90%), thermal power plants (6%), vehicular emissions (3%) and heat-only boilers (1%)[13].

Household Stoves. In the extreme cold climate of Mongolia, Ger area residents use inefficient traditional cooking-cum-heating household stoves that are fired by fuelwood and low quality coal. On average, 4 to 6 tonnes of coal is consumed in one household stove every winter. There are as many household stoves in the Ger areas as the number of households, that is, about 135,236[14] households (January 2007) or about 60% of the population of Ulaanbaatar. The lack of alternative instruments for heating and cooking prevents a shift if use of fuel.

[12] Water and Wastewater Master Plan of Ulaanbaatar – 2020

[13] Provide reference

[14] Statictics Department, Municipality of Ulaanbaatar.

Energy Inefficient Housing. Although a majority of households live in Gers, relatively better-off households have built wooden houses. These wooden houses are often energy-inefficient and use inefficient household stoves for heating, exacerbating the problem of air pollution. Lack of building codes for energy efficient housing is another important issue in Ger areas.

Environmental Issues. The use of fuelwood in cooking-cum-heating stoves has not only resulted in air pollution, but also led to depletion of forest cover in the city's immediate surroundings. The collection, transportation and disposal of the huge amounts of ash generated by consumption of large quantities of fuelwood and low quality coal are a huge solid waste management issue.

Recommendations

1) *Promote Energy Efficient Buildings*

   a) *Building Codes and Norms*. Promote energy efficient construction of new and rehabilitation of existing buildings, and the preparation and implementation of related building codes.

   b) *Focus on Poverty*. To be implemented successfully, energy efficient building codes and norms will have to be developed, taking into account the prevalence of urban poverty in Ger areas.

   c) *Pilot Project*s. Implement pilot projects to demonstrate the usefulness of energy efficient building codes and norms, build awareness about them and create and/or trigger demand for energy efficient construction.

2) *Promote Energy Efficient Cooking and Heating Stoves*

   a) *Learn from Experience*. Review lessons learnt under the World Bank financed Household Stoves Improvement Project.

   b) *Replace Energy Inefficient Stoves by Energy Efficient Stoves*. Promote the use of energy efficient stoves. This will require (i) further development of energy efficient stoves; (ii) Due to the high cost of manufacturing improved and energy efficient stoves, financial assistance and innovative institutional mechanism for marketing, delivery and replacement of existing stoves.

   c) *Existing Stove Improvements (ESI)*. Explore the possibility of conducting existing stove improvements wherever feasible, after reviewing the lessons learnt under the Household Stoves Improvement Project (as in 2(a) above).

   d) *Reduce Heating Cost through Promotion of Energy Efficient Stoves.* Use of energy efficient stoves reduces the consumption of fuel to 3 tonnes of coal and 1.5m³ firewood. The retail price of such amount is 219,000 MNT (USD 190) which saves 243,000 MNT (USD 211).

   e) *Information, Education and Communication.* Develop a system of information, education and communication to inform Ger area residents about options available to replace and/or improve their existing cooking-and-heating stoves.

3) *Heat only boilers*. Conduct a study to (i) examine the amount of fuelwood and coal used in heat-only boilers; (ii) estimate the amount of pollution generated, and (iii) explore the possibility of improving their design. Implement the recommendations of the study as feasible.

4) *Promote Fuel Shift and New Heating and Cooking Devices*

   a) *Research and Development*. Support research on and development of less-polluting fuels, including 'pressed fuels' such as fuel briquettes.

   b) *Promote Electricity-based Heating.* Shift from fuelwood and coal based heating to electricity based heating. This will require addressing of issues related to the cost of electricity-powered heaters and electricity tariff for the urban poor.

   c) *Promote Electricity-based Cooking*. Shift from fuelwood and coal-based cooking to electricity-based cooking. This will require addressing of the cost of electricity-powered cooking-stoves and electricity tariff for the urban poor.

5) *Air Pollution and Health Impacts*. The above recommendations, if implemented, would lead to reduction in indoor and outdoor air pollution, and related health problems. However, in order to

monitor progress in the reduction of air pollution and related measures, monitoring systems will have to be established as follows:

a) *Air Pollution Monitoring System* to regularly measure indoor and outdoor air pollution.

b) *Health Impact Monitoring System* to regularly collect data on various indicators related to health impacts of air pollution.

6) *Conduct Studies on Forest cover alterations* that (i) quantify the amount of fuelwood consumed in Ulaanbaatar and its Ger areas; (ii) collect data on the location of forests and woodlands that are getting depleted due to fuelwood consumption; (iii) analyse the loss of forest and woodland cover over past years; and (iv) make appropriate recommendations, including community-based forest management.

a) *Afforestation*. (i) Identify and prioritise areas for afforestation, and (ii) support active afforestation in partnership with local communities.

b) *Forest Resource Management Monitoring System*. Put in place a monitoring system to regularly collect data on the status of forests and monitor progress in afforestation.

6.1.4 Soil Erosion and Pollution

Issues

Rapid increase in the Ger area population has resulted in the destruction of the city's ecological environment. This is because of increased air pollution as well as solid waste disposal, which results in the pollution of soil.

According to the statistics of 2005, the soil of Ulaanbaatar city has been highly polluted with heavy metals. Pollution rate of soil in city centre, Ger areas and western part is 3 to 8 times (Zinc = 3.0-8.0) higher compared to the average soil composition. The general soil pollution rate in Bayankhoshuu, Denjiin Myanga, Amgalan, Sharkhad, Khailaast valley and Zuun Ail areas is 10-16 times higher than the average.

Results of the studies imply that the pollution due to heavy metals is much higher in the areas with high population density than in areas with low population density. The levels of lead, zinc and chrome in the soil is higher than the norm, indicating high level of soil pollution with heavy metals. For example, in Sudalt area, the lead in the soil at 433-533mg/kg exceeds the norm by 4-5 times, while in Demjiin Myanga area, the level of zinc at 588 mg/kg exceeds the norms by 8 times.

Bacteriological studies show that 36.3% of the total sample is clean, while the other 63.7% has bacteriological pollution at some levels. In Khailaast valley, 1 gram of soil had 12.39 million bacterial cells, that is, it exceeded the norms by 1,239 times.

Recommendations

1) Prevent the increase in soil pollution by addressing the issues of solid waste and wastewater management in Ger areas.

2) Reduce and prevent soil erosion through the increase of green spaces and establishing of micro-parks in Ger areas.

3) Stop the dumping of solid waste in open sites and establish waste collection depots/ sites.

4) Improve earth roads in Ger areas, realign them and increase the amount of green space along them.

5) Undertake soil restoration activities in sites with polluted soil.

6) Control and limit mineral excavations and building material extraction, monitor the activities of mines and quarries, and restore the environment (including abandoned mines and quarries) within Ulaanbaatar.

6.2 Improvement of Ger areas

6.2.1 Land Planning and Management

Issues

Ger areas are the most cost-efficient settlements for in-migrants. However, the lack of development policies for Ger areas of Ulaanbaatar city has resulted in the unplanned and haphazard expansion of Ger areas around the city. Moreover, the approval and proactive implementation of the land privatization law of 2002, which enables every household to own land up to 700 sqm, has become one of the main reasons for rapid expansion of Ger areas. This raises many issues regarding the land resources for future settlements, land demand for residential use and their regulation. The issues are reviewed at city and Ger area levels below.

City-level Land Planning, Development and Management Issues

1) Lack of **Land Resources for City Development and Expansion** because of.
   a) *Natural Topography and Lack of Land Resources*. Ulaanbaatar and its immediate surroundings have undulating topography, which makes the land uninhabitable. All habitable land around the city has been utilised for city expansion in general and Ger area expansion in particular. Additional land that is available for habitation is located at long distances, making it economically unviable to access.
   b) *Problem of Free High Land Allowance*. The issue of lack of adequate land resources is related to the free high land allowance of up to 700 sqm/household. This has encouraged in-migrants and people in apartment areas of Ulaanbaatar take the opportunity of getting land, resulting in numerous requests for plots (*Khashaas*) in Ger areas. This has also led to low density expansive spatial growth of the informal settlements.
2) Lack of **regulation for land issues** have constrained the development issues of Ger areas as follows:
   a) Lack of legal and institutional frameworks for the acquisition of privately owned land (including related property) for public purposes.
   b) Lack of market-based valuation of land and payment of related compensation.
   c) Lack of detailed legal and institutional frameworks for private sector, community and state participation in the development of land and infrastructure[15].
   d) Lack of legal and institutional frameworks for raising capital from the public and future buyers of residential apartments.

Ger-area Specific Land Planning, Development and Management Issues

Land issues are comparatively different in three Ger types of areas.

Central Ger area. The biggest development challenge here is to coordinate the increasing demand for developable land. For the implementation of the broad strategy of "Redevelopment" of Central Ger areas, the main issues that need to be addressed are:

1. *Regulation for demand and supply of developed land*. There is a huge demand for developed land from individuals, industries and other entities. Data from the six central districts shows that in 2006, 618 requests were made to District Land Offices for 303.7 hectares of land (see Appendix 1). An important step is to prioritise and earmark the Ger areas for "Redevelopment". This will have to take into account the existing infrastructure and viability of its extension, areas where pressure for land development is high (demand factor), and availability of financial resources for "redevelopment".

2. *Substantial/ Technical and Related Legal Issues*

[15] World Bank, 2005. *Mongolia's Regional Development: World Bank Policy Note*, Processed.

a) Lack of guidelines for the redevelopment of Central Ger areas, including for preparing of "Ger Area Redevelopment Plans".

b) Lack of planning norms and bylaws for (a) city planning and development, and (b) for consolidation of Ger plots to facilitate land development.

c) Lack of building codes and bylaws for construction of new energy-efficient buildings and rehabilitation of existing buildings. This applies to the built-up area of the city as well as Ger areas.

3. *Financial Resources*. Lack of budgetary and financial resources with the public sector for the acquisition and development of land (and infrastructure).

4. *Institutional Issues*. There is a need to determine what kind of technical assistance to provide to the MUB's Land Administration Department and District Land Offices for the preparation and implementation of Ger Area Redevelopment Plans.

Middle Ger area. The development challenge here is how to improve people's quality of life through better provision of infrastructure and basic urban services in a widespread area. For implementing the broad strategy of "Comprehensive Upgrading" of Middle Ger areas, the main issues to be addressed are:

1. *Demand and Supply of Land Allocation*. There is a huge demand for land allocation from individual households, industries and other entities in Middle Ger areas. Data from the six central districts shows that in 2006, 1,638 requests were made to District Land Offices for 503.7 hectares of land (see Appendix 1). If limited habitable land is available in the Middle Ger Areas, then the issue is how to address the demand for land allocation.

2. *Substantial/Technical Issues*

a) Lack of guidelines for the comprehensive upgrading of Middle Ger areas, for preparing "Ger Area Comprehensive Upgrading Plans" (including "readjustment" of Ger area layouts), and for creating awareness and a demand for Comprehensive Upgrading.

b) Although a legal framework exists for Housing Area Action Plans (HAAPs) as a tool for "comprehensive upgrading", it is unclear how the current urban planning process encourages the preparation, implementation and replication of HAAPs. This is or may be related to:

   i) Lack of demand assessment for HAAPs,

   ii) Lack of detailed technical guidelines for the preparation and implementation of HAAPs (related to point 2 above); and

   iii) Lack of budgetary and financial resources to embark on the preparation and implementation of HAAPs.

c) Learn lessons from HAAP implementation. ADB has assisted the preparation and implementation of HAAPs, and there is a need to learn lessons from this experience.

3. *Cost of Comprehensive Upgrading and Lack of Financial Resources*

a) The cost of infrastructure development and basic urban service provision is very high due to the low population density and expansive growth of Middle Ger areas. The issue here is how to reduce the cost of infrastructure development and basic urban service provision, and for improved distribution within the framework of Comprehensive Upgrading.

b) Lack of budgetary and financial resources with the public sector (MUB, and Duureg-level and *Khoroo*-level governments) for the development of infrastructure, and provision of basic urban and social services for Comprehensive Upgrading.

4. *Institutional Issues*. There is a need to determine the requirements for technical assistance to the MUB's Land Administration Department and District Land Offices for the preparation and implementation of "Ger Area Comprehensive Upgrading Plans".

Peri-urban Ger area. The development challenge in these Ger areas is orderly expansion, and the reservation of land for infrastructure, and basic urban services and amenities. For implementing the broad strategy of "Incremental Upgrading", the main issues to be addressed are:

1. *Demand and Supply of Land.* There is a huge demand for allocation of land from individual households (both in-migrants and residents of Ulaanbaatar), industries and other entities. Data from the six central districts shows that in 2006, 3,887 requests were made to the District Land Offices for 1,160.8 hectares of land – much higher than those received in Central and Middle Ger Areas (see Appendix 1). If there is limited habitable land available in close proximity of the City, then the question is how to address the requests for land allocation?

2. Substantial/ Technical Issues

a) Lack of guidelines for the incremental upgrading of Peri-urban Ger areas, including for preparing "Ger Area Incremental Upgrading Plans", and for building awareness and demand for Incremental Upgrading.

b) Lack of guidelines for planned expansion of Peri-urban Ger areas, including for reservation of land for infrastructure, basic urban services and amenities, and for preparing "Ger Area Expansion Plans".

3. *Cost of Incremental Upgrading and Lack of Financial Resources*

a) The cost of infrastructure development and basic urban service provision is very high due to the low population density and expansive growth of Peri-urban Ger areas. The issue here how to reduce the cost of infrastructure development and basic urban service provision, and for improved distribution and provision within the framework of Incremental Upgrading?

b) Lack of budgetary and financial resources with the public sector (MUB, and Duureg-level and *Khoroo*-level governments) for the development of infrastructure, and provision of basic urban and social services for Incremental Upgrading.

4. *Institutional Issues*. There is a need to determine what kind of technical assistance needs to be provided to the MUB (including its Land Administration Department, District Land Offices, District Governors' Offices, *Khoroo* Governors' Offices) for the preparation and implementation of "Ger Area Incremental Upgrading Plans" and "Ger Area Expansion Plans".

Recommendations

The recommendations common and specific to three types of Ger areas given below.

City-level Land Planning, Development and Management Issues

1) *Increase Population Density in Ger Areas*. Increasing the population density of Ger areas is critical for: (a) the growth and development of Ulaanbaatar city; (b) lowering the costs of infrastructure development, and provision of basic urban services and amenities; (c) freeing land to meet the demand for additional land for urban development; and (d) addressing urban poverty (by reducing the costs of tariff and service charge for various basic urban services, transport services and amenities).

2) *Review and Reduce Free High Land Allowance*. While ways and methods are examined to increase population density in Ger areas, it is critical to examine and review the free high land allowance of up to 700 sqm/household. Lowering the free land allowance will help in: (a) controlling the expansive growth of Ger areas; (b) lowering the per capita cost of infrastructure development, and provision of basic urban services and amenities; (c) enhancing the availability of land resources to meet the demand for urban development; and (d) addressing urban poverty (as in 1 above).

3) *Develop Legal and Institutional Frameworks* for the: (a) acquisition of privately-owned land (including related property) for public purposes; (b) market-based valuation of land; (c) payment of related compensation; (d) private sector participation in development of land and infrastructure; and (e) raising capital from public and future buyers of residential apartments.

4) Review Current Ger area Land Management Issues:

a) Restrict the construction and planning of the industrial facilities and services which have negative impacts on environmental, health and comfortable living conditions of Ger area residents

b) Relocate leather processing and other industries that dump wastewater into the rivers, out of the city or build small and/or medium sized wastewater treatment facilities for them.

Ger-area Specific Land Planning, Development and Management Issues

Central Ger area.

1) *Identify Central Ger Areas for "Redevelopment"*. The aim is to make efficient use of land by increasing population density. Identification of Ger areas for "redevelopment" will have to take into account the existing infrastructure and viability of its extension, areas where pressure for land development is high (demand factor), and availability of resources.

2) *Prioritise Central Ger Areas for "Redevelopment"* in response to the high demand for developed land from individuals, industries, and other entities in Central Ger areas of Ulaanbaatar city. Important Stakeholders: CUDPD, LAD, UPRDI, JICA (Master Plan Project), UN-HABITAT (GUSIP Project)

3) *Prepare Guidelines for Redevelopment of Central Ger Areas*. This would include guidelines for "Ger Area Redevelopment Plans".

4) *Progressive Planning Norms*. Prepare and implement progressive planning norms and bylaws for: (a) city planning and development, and (b) consolidation of Ger plots to facilitate land development. The ongoing implementation of JICA Master Plan is a good opportunity to address this issue.

5) *Building Codes for Energy Efficient Construction*. Prepare and implement building codes and bylaws for energy-efficient construction of new buildings and for rehabilitation of existing buildings. This applies to the built-up area of the city as well as all three types of Ger areas. The ongoing implementation of GTZ Integrated Urban Development Programme is a good opportunity to address this issue.

6) *Financial Resources*. Explore the suitability of innovative financial and institutional mechanisms to raise financial resources from public and private sectors for the acquisition and development of land (including infrastructure development).

7) *Institutional Strengthening*. Assess the institutional strengthening needs of the MUB's Land Administration Department and District Land Offices for the preparation and implementation of Ger Area Redevelopment Plans.

Middle Ger area.

1) *Efficient Use of Land Resources to Meet Demand*. Find innovative ways to make efficient use of limited land resources available in Middle Ger areas. This would include increasing the density and reduction in the availability of up to 700 sqm/household. A study is required on increasing population density and lowering land usage per household. The GUSIP Project of UN-HABITAT will conduct this study.

2) *Guidelines for Comprehensive Upgrading of Middle Ger Areas*. The aim is to enable preparing of "Ger Area Comprehensive Upgrading Plans" (including "readjustment" of layouts), and building awareness and demand for Comprehensive Upgrading.

3) *Status of HAAP Implementation*. Conduct a study on how the current urban planning process encourages the preparation, implementation and replication of HAAPs.

4) *Build on Lessons Learnt from HAAP Implementation*. Future preparation and implementation HAAPs should take into account lessons learnt during ADB assisted preparation and implementation of HAAPs.

5) *Cost of Comprehensive Upgrading*. To ascertain/ estimate the cost of "comprehensive upgrading": (a) review the implementation of HAAP (as in 4 above); (b) conduct a study on increasing population density and lowering land usage per household (as in 1 above); and (c) prepare and implement a "Ger-area Improvement Action Plan" (GIAP)[16].

6) *Financial Resources*. For "comprehensive upgrading", find innovative ways to raise financial resources, including additional budgetary resources from MUB, and Duureg-level and *Khoroo*-level governments; central government fiscal transfers; community's own resources through the establishment and promotion of saving and credit groups; private sector participation; and possible international aid.

7) *Institutional Strengthening*. Assess the institutional strengthening needs of MUB's Land Administration Department and District Land Offices for the preparation and implementation of "Ger Area Comprehensive Upgrading Plans" (including "readjustment" of Ger area layouts).

Peri-urban Ger area.

1) *Efficient Use of Land Resources to Meet Demand*. Find innovative ways to make efficient use of limited land resources available in Peri-urban Ger areas. This will include increasing the density compared to the current use of up to 700 sqm/household. A study on increasing population density and lowering land usage per household needs to be conducted. UN-HABITAT GUSIP Project will conduct this study.

2) Restrict the involvement of the Ger areas settling in habitable land into the improvement and development activities and conduct their re-allocation.

3) *Guidelines for Incremental Upgrading of Peri-Urban Ger Areas* to support preparing of "Ger Area Incremental Upgrading Plans" (including "readjustment" of layouts), and building awareness and demand for Incremental Upgrading.

4) *Guidelines for Planned Expansion of Peri-Urban Ger Areas* for preparing "Ger Area Expansion Plans", including reservation of land for infrastructure, basic urban services and amenities. There is a clear need to ensure that planning of Ger areas precedes their actual expansion and privatisation.

5) *Cost of Incremental Upgrading*. To ascertain/estimate the cost of "incremental upgrading": (a) conduct a study on increasing population density and lowering land usage per household (as in 1 above); and (b) prepare and implement a "Ger-area Improvement Action Plan" (GIAP)[17].

6) *Financial Resources*. For "incremental upgrading" and preparing "Ger-area Expansion Plans", find innovative ways to raise financial resources. This would include additional budgetary resources from MUB, and Duureg-level and *Khoroo*-level governments; central government fiscal transfers; community's own resources through the establishment and promotion of saving and credit groups; private sector participation; and possible international aid.

7) *Institutional Strengthening*. Assess the institutional strengthening needs of MUB's Land Administration Department, District Land Offices, District Governors' Offices and *Khoroo* Governors' Offices for the preparation and implementation of "Ger Area Incremental Upgrading Plans" and "Ger Area Expansion Plans".

6.2.2 Infrastructure and Basic Urban and Social Services

The GUSIP Project examined the levels of provision of 13 basic urban services and infrastructure. These basic urban services and infrastructure issues will be dealt separately for the three types of Ger areas.

[16] Financial assistance for GIAP preparation will be provided under UN-HABITAT GUSIP Project.

[17] Financial assistance for GIAP preparation will be provided under UN-HABITAT's GUSIP Project.

6.2.2.1 Water supply

Issues. Given their morphology and population density, Ger areas are supplied water through water kiosks that have been built over the years by either USUG, or with financial assistance from other sources (World Bank USIP-1). Water supplied by the kiosks is quantified at 7.3 litres/capita/day, which is below the minimum requirement of 25 litres/capita/day defined by the World Health Organisation. Based on the findings of the Water and Wastewater Master Plan of Ulaanbaatar – 2020[18] (WWMPU) prepared in 2006, some common issues related to water supply in all three types of Ger areas are:

1) *Financial capacity of households*, which is related to urban poverty and the amount of water consumed by Ger area residents.
2) *Arduousness of water-carrying task* can lead the household to limit the number of journeys to fetch water.
3) *Distance to water kiosks* is related to the previous point. The kiosk-based water supply system does not meet the proximity objective since the distance to the kiosks in some areas is up to 3 km. Central Ger areas usually have a high density of kiosks, while remote (Middle and Peri-urban Ger) areas have a lower density of kiosks.
4) *Delivery capacity of water kiosks.* The actual time needed to place the water containers, fill them, pay the bill and leave the place is limitations. Discharge from the kiosks can range from 2-3 litres/second to 1 litre/second or lower. The kiosks that are connected to the water supply network, as in Central Ger areas, have good delivery capacity, while the truck-supplied kiosks in remote Peri-urban Ger areas have a lower delivery capacity. The level of water supply provision varies across the three types of Ger areas. For comparison, see the Table 1 below for a few indicators on water supply by type of Ger areas.

Table 1: Water Supply Characteristics in Three Types of Ger Areas in Ulaanbaatar

Indicator	Central Ger Area	Middle Ger Area	Peri-urban Ger Area
Total number of Water Kiosks	129	211	79
Water kiosks supplied with water trucks (% to total kiosks)	67 (52%)	132 (62%)	77 (98%)
Water kiosks connected to pipelines (% to total kiosks)	59 (42%)	75 (36%)	1 (1%)
Water kiosks connect to water wells (% to total kiosks)	3 (2%)	4 (2%)	1 (1%)
Average number of Households served by one Water Kiosk	Over 1,400	250	406
Timetable of Working Hours	10.00 – 14.00 ~ 16.00 - 20.00	10.00 – 14.00 ~ 16.00 - 20.00	10.00 – 14.00 ~ 16.00 - 20.00
Average distance from the local residents	500-1,000 m	250 m	500 m
Farthest distance from the local residents	1 km	1 km	3 km
Average Water kiosk capacity	5000-8000 litre	5,000-8,000 litre	5,000-8,000 litre
Water quality Water truck supplied kiosks Kiosks connected to pipelines Ground water supplied kiosks	 Unsatisfactory Good Unsatisfactory	 Average Good Average	 Average Average

[18] Municipality of Ulaanbaatar (2006) *Water and Wastewater Master Plan of Ulaanbaatar – 2020,* Seureca, Ulaanbaatar.

Indicator	Central Ger Area	Middle Ger Area	Peri-urban Ger Area
Water price/litre at kiosks Water price/litre at deep water wells	0.5 MNT 2 MNT	0.5-1 MNT	1-2 MNT

Source: UN-HABITAT GUSIP Fieldwork – 2006-07

Strategic Principles

House-to-house water connections should be provided to the residents of Central Ger areas that will be "redeveloped" in the medium to long-term.

A cost-effective solution is preferred based on maximising the capacity of the existing system in terms of improved water delivery and for minimum kiosk construction, and without changing the general organisation. This is because remote (Middle and Peri-urban Ger) areas are the hardest to connect to the water supply network and will require large investments. The extension of opening/ working time of kiosks would require significant increase of workers for a limited benefit, primarily because it is unlikely that people will fetch water in the early-morning and/or late evening. This also applies to Central Ger areas that will not be "redeveloped" in short to medium-term.

Strategic Objectives

Central Ger area

1) Redevelop of Ger areas leading to construction of apartment blocks with inbuilt water supply systems.
2) Until "Redevelopment" of Ger areas takes place and/or house-to-house water connections are feasible, improve water supply services by:
    a) Increasing the number of water kiosks to reduce distance travelled to fetch water;
    b) Increasing the capacity of water kiosks to reduce their population loads;
    c) Improving kiosk water supply through (i) improving water quality by regular cleaning and disinfecting, and (ii) extending working hours by exploring the possibility of connecting them to water trunk pipelines.

Middle Ger area

1) Where feasible, provide house-to-house connections for water supply (check if this has been recommended in the WWMPU).
2) Until house-to-house water connections are feasible, improve water supply by:
    a) Increasing the number of water kiosks to reduce distance travelled to fetch water;
    b) Increasing the capacity of water kiosks to reduce their population loads;
    c) Improving kiosk water supply through (i) improving water quality by regular cleaning and disinfecting, and (ii) extending working hours by exploring the possibility of connecting them to water trunk pipelines.

Peri-urban Ger area

1) Increase the number of water kiosks to reduce distance travelled to fetch water;
2) Increase the capacity of water kiosks to reduce their population loads;
3) Improve kiosk water supply through (a) improving water quality by regular cleaning and disinfecting, and (b) extending working hours by exploring the possibility of connecting them to water trunk pipelines.

6.2.2.2 Sanitation

Issues

The three aspects to Ger area sanitation, namely pit latrines, grey water disposal, and bathhouses, and related issues are described below.

Pit Latrines. The current practice in Ger areas is the use of simple and often unlined pit latrines, which are dug up by residents themselves and closed once the pits are filled up, often after 4 to 5 years. An estimated 74,971 pit latrines are in use in the Ger areas of Ulaanbaatar city (February 2007, see Table 2). The related issues are:

1) *Groundwater pollution*. In sensitive areas, such as where the groundwater table is very high/ close to the surface, pit latrines are potentially major sources of groundwater pollution.

2) *Unsustainable single use system*. The pits are used only once over a 4 to 5 year period, that is, they are not reused but closed down once they are filled up. This single use system is unsustainable in older *khashaas* where no ground space is left to dig "new" pits.

3) *Soil structure.*

   a) Muddy and/or watery soil entails additional cost of lining the pits. Due to the low incomes of Ger area residents, the pits are lined with timber (not concrete), which is permeable and hence a potential source of groundwater pollution.

   b) Rocky soil areas make it difficult to dig deep pits, while the shallow pits that are often only 1.5 metres deep, fill up fast. A new pit is needed every 3 years.

4) *Unhygienic*. Pit latrines are unhygienic because they often lack proper sanitary platforms (often made up of wooden planks), which only partly cover the pits and causes odour, especially during the summer months[19].

5) *Flies and infectious diseases*. Because the pits are partly uncovered, they cause proliferation of flies and diseases such as hepatitis and dysentery[20]. Moreover, in some areas, during winter months, residents throw the frozen contents of the pit latrines in the streets (a practice common to Central Ger areas), which is a serious threat to public health.

Grey Water. The current practice for grey water disposal is the use of unlined grey water holes that are usually dug up by residents themselves in their *khashaas* compounds. However, residents in several Ger areas do not have grey water holes due to lack of space (especially in Central Ger areas) and rocky soil structure (as in remote peri-urban Ger areas). This results in residents disposing their grey water in public spaces, such as streets and vacant lands or drainage channels and steep slopes.

Table 2: Sanitation Characteristics in Three Types of Ger Areas in Ulaanbaatar

Indicator	Central Ger Area	Middle Ger Area	Peri-urban Ger Area
Number of household with ***pit latrines*** Number of households with ***no pit latrines***	25,778	33,776	15,417 10%
Number of households with ***grey water holes***	90% in some areas Very few in others		80% have no grey water holes
Number of ***bathhouses***	14	8	2
Bathhouse wastewater holding tanks which are cleaned regularly	3	2	
Price per cleaning service for wastewater holding tanks	30,000 MNT	30,000 MNT	
Service price per bath (in MNT) • Adults • Children	 1,000-1,500 500-1,000	 1,000 1,300	 1,300 800

Source: UN-HABITAT GUSIP Fieldwork – 2006-07

[19] Municipality of Ulaanbaatar and World Bank (2006) *Hyiegne and Sanitation Situtation Report for Ger Areas, Mongolia*, USIP-2 Project Management Unit, Ulaanbaatar.

[20] UN-HABITAT GUSIP fieldwork

Bathhouses. A system of bathhouses is prevalent for providing bathing and laundry facilities in Ger areas. Bathhouses, which are usually connected to the water supply network since they consume large amounts of water, are concentrated in Central and Middle Ger areas (see Table 2 for details). Some bathhouses are also connected to the sewerage network, while others have wastewater holding tanks that are emptied using the municipal cleaning service. Bathing facility is provided for a service charge ranging from 1,300 to 1,500 MNT per bath (US$ 1.1 to 1.3/bath), with the service charge being lower for children. The following are the main issues related to bathhouses:

1) *Insufficient units*. Compared to the demand, there are an insufficient bathhouses in the Ger areas. Consequently, the users have either to travel long distances or rely on relatives and/or friends living in apartments for their bathing and laundry needs. In some cases, children are bathed at home with limited quantities of water.
2) *Lack of financial resources*. Although residents have requested the district and *Khoroo* governments to build bathhouses in Ger areas where they do not exist, they have limited finances for building new bathhouses. The cost of different types and size of bathhouses ranges from 10 to 40 million MNT (or US$ 10,000 to 40,000).
3) *Lack of land*. In some cases, since Ger areas were developed with little planning and subdivision guidance, there is no reserved land available to build bathhouses.
4) *Operation and Maintenance*. Some bathhouses are reported to have poor hygienic conditions due to poor operation and maintenance.

Recommendations

The recommendations on sanitation are divided into two sections. The first set of recommendations is related to Central Ger areas, and the other to all three types of Ger areas.

Sanitation for Central Ger Areas to be fully redeveloped: The "redevelopment" in the form of apartment and other buildings, and as individual plotted housing will - like any other urban built-up area, have in-built sanitation systems.

Sanitation for All Other Ger Areas: will have the following options for sanitation:

Pit Latrines

1) *Ventilated Improved Pit Latrines (VIP latrines)*. Promotion and development of VIP Latrines, which is supported by various international development agencies. However, the cost of constructing VIP latrines is prohibitively high. Some of the related concerns have been dealt with under the *Hygiene and Sanitation in Ger Areas in Ulaanbaatar* study conducted by MUB and World Bank[21].
2) *Dry Toilets*. In sensitive areas where groundwater table is very high, dry toilets can be built without digging deep for the toilet pits (several together where possible), which would have to be frequently emptied.
3) *Pit Emptying System*
    i) *Pit Emptying Service*. The progressive conversion from traditional simple pit latrines to VIP latrines implies the phasing in of a pit emptying service with trucks, and the disposal of collected material in a sanitary manner.
    ii) *Service Charge for Sustainable Pit Emptying Service*. The calculations and simulations for this service (including purchase of trucks, salaries, fuel and maintenance costs) made under WWMPU show that the real cost of one emptying operation will be 9,700 MNT.
4) *Test New Options*. There is a need to test the suitability of other ecologically safer options to address the problems of simple pit latrines and related environmental issues.

[21] Municipality of Ulaanbaatar and World Bank (2006) *Hyiegne and Sanitation Situtation Report for Ger Areas, Mongolia*, USIP-2 Project Management Unit, Ulaanbaatar.

5) *Pilot Projects on Sanitation*. In addition to the above, the GUS supports the WWMPU recommendations[22] and proposes to conduct the following pilot studies:

   i) Analysis of sludge removed from latrines 'to determine the physical, chemical and bacteriological characteristics and evolution inside the pits, during and after use.'

   ii) Experimenting with on-site composting. 'To evaluate the possibilities of production of compost directly from the latrines for on-site use using rustic methods'.

   iii) Experimenting with a latrine drainage service. 'To evaluate the conditions of acceptability and sustainability of a service that would enable the households to use a pit latrine for longer instead of digging a new one.'

Grey Water Management: An increase in water consumption with the construction of additional kiosks and improved delivery is expected to result in the generation of increased quantities of grey water. For improved grey water management, especially in view of public health concerns, the following recommendations are made:

1) *Mandatory Grey Water Holes*. Residents in Ger areas should have grey water holes in their *khashaas* for the management of grey water.

2) *Sensitive Areas*. In Ger areas that are sensitive to groundwater pollution, the grey water holes should be lined. The grey water management could be improved by having its collection combined with lined latrine pits.

3) *Need for Innovative Ideas*. Based on experience gained in Ger areas, new methods need to be found for better grey water management.

Bathhouses: There is a clearly felt need for additional bathhouses in the Ger areas.

1) *Demand Study for Bathhouses*. A detailed study focussing on the following issues should be immediately carried out: (i) types and number of bathhouses that currently exist in Ger areas; (ii) the suitability of service charge for the urban poor; (iii) the current and future demand for bathhouses (in view of population projections); (iv) availability of land for bathhouse construction; (v) feasibility of constructing bathhouses with sewerage connections and those with wastewater holding tanks; (vi) availability of financial resources with the public sector to build bathhouses; (vii) new institutional mechanisms (including public-private partnerships, Build-Operate-Transfer) for bathhouse construction; (viii) innovative operation and maintenance arrangements, such as community-based management; and (ix) bathhouse-centred (small) shopping complexes (as is the case with several bathhouses currently).

2) *Build Additional Bathhouses.* In response to the requirements as per the demand study, build additional bathhouses using innovative financial and institutional mechanisms. Community participation in form of sweat equity should be encouraged for a better sense of ownership of these assets.

3) *Revision of Service Charge*. If the study findings suggest with good reason/s, revise the service charge per bath in the existing bathhouses. Community-based operation and maintenance could bring down costs, and therefore the service charge.

4) *Test Innovative Ways of Bathhouse Operation and Maintenance*. Innovative ways need to be tested for O&M of bathhouses. Instead of transferring the new bathhouses, especially those constructed with donor funds and sweat equity, to a private operator, community-based bathhouse O&M should be tested. The profits made from such arrangements could either be reinvested to lower the service charge and/or for creating/ building other needed communal assets.

[22] Municipality of Ulaanbaatar (2006) *Water and Wastewater Master Plan of Ulaanbaatar – 2020,* Seureca, Ulaanbaatar.

*6.2.2.3 **Solid Waste Management***

Issues

Given its climate and economy, Mongolia has unique solid waste management (SWM) characteristics such as the amount of waste generated and its composition. In 2005[23], solid waste generation rate in Ger areas in winter and summer months was estimated at 951 and 202 grams/capita/day respectively, and the daily generation of waste was 395.6 and 84.0 tonnes per day respectively. In winter, the solid waste in Ger areas has significant amount of ash from the traditional household stoves in which fuel wood and low quality. District Cleaning Service (or TUK), for each district is responsible for solid waste collection services in Ger areas. The three types of Ger areas face the following common SWM issues:

1) *Waste Collection Fee and Urban Poverty*. Solid waste from Ger areas is collected on cash payment of the monthly fee of 2,500 MNT or US$ 2.2 (see Table 3). According to the GUSIP fieldwork, this fee is "very high" and does not take into account the difference in waste generated by households of different family size. 'The collection fee in Ulaanbaatar is based on the market mechanism without any subsidies. Even though the income level in the Ger areas is lower than that in the built-up city area, the collection fee in the Ger areas is set at relatively higher level than in the planned area, considering the frequency of the collection service. This results in the lower fee collection rate in the unplanned area'[24], which in turn affects the frequency of waste collection (see point 2 below).

2) *Frequency of Waste Collection and Urban Poverty*. Solid waste is collected once a month in the Ger areas. This means that Ger area residents are expected to store waste in some type of container in their *khashaas* (plots) for at least a month. One of the main reasons for the limited service available in the Ger areas is that many households cannot afford to pay the collection fee[25] (as explained above). The payment level of waste collection fee in Ger areas is 30%, and is the main constraint for the provision of the service. It is possible to provide regular waste collection services if all residents pay the waste collection fee regularly.

3) *Waste Collection Vehicles and Physical Access in Ger Areas*. The frequency of waste collection in Ger areas is affected by the inadequate number of waste collection vehicles owned by MUB and leased out to TUKs. Moreover, a majority of these vehicles have been in use for more than 15 years on average, and many often break down. For example, during winter months, the number of vehicles that are out of order shoots up, and the amount of waste collected declines to half the amount generated[26]. In winter months, slippery roads in undulating areas also hinder regular waste collection.

4) *Open Garbage Dumps*. Owing to the above problems and issues, much of the solid waste is self-disposed or illegally disposed in surrounding open areas, such as streets (a public health concern), drainage channels (which often blocks drains and leads to flooding) and the like. In winter, such waste includes large amounts of ash from cooking-and-heating stoves. This practice results in localised open garbage dumps from which waste is blown by winds and further exacerbates the problem. In some Ger khoroos (sub-districts), industrial and/or manufacturing units dump hazardous industrial waste in the open garbage dumps.

5) *Seasonal Mass Cleaning*. To clean up the solid waste from open dumps, including the large quantity of ash, MUB is forced to conduct a large-scale cleanup every summer. GUSIP fieldwork revealed that *Khoroo* Governor Offices organise "mass or public cleaning days" but some residents are not "actively involved". These Offices also 'take measures to involve the unemployed and residents who do not pay the waste collection fee'.

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[23] JICA, 2007. *The Study on Solid Waste Management Master Plan for Ulaanbaatar in Mongolia*, Main Report, March 2007 JICA. [Table 3-1: Estimation of Waste generation amount (2005)]. Available on <http://lvzopac.jica.go.jp/servlets/library?func=function.opacsch.mmdsp&view=view.opacsch.mmindex&shoshisbt=1&shoshino=0000171388&volno=0000000000&filename=11849783_01.pdf&seqno=1>. Accessed 14 May 2010

[24] *The Study on Solid Waste Management Master Plan for Ulaanbaatar in Mongolia, Draft Final Summary Report: Summary*, JICA, 2006

[25] See previous footnote, p 109.

[26] See previous footnote, p. 110.

Table 3: Characteristics of Solid Waste Management in Three Types of Ger Areas

Indicator	Central Ger Area	Middle Ger Area	Peri-urban Ger Area
Waste Collection Fee per month (in MNT)	2,500	2,500	2,500
Number of open garbage dumps	N/A	N/A	N/A
Number of Community Groups engaged in Waste Collection	N/A	N/A	N/A

Note: N/A = Not Available.

***Community Participation in SWM*:** GUSIP fieldwork showed that local communities take more initiative and are more active when SWM improvement works are conducted in partnership with them, and such partnership is encouraged by *Khoroo* Governor Offices. Some of the efforts for neighbourhood-level SWM where *Khoroo* Governor Offices attempted to involve the local community are summarised below:

1) *Past and Ongoing Efforts*.

   i) *Removal of Open Garbage Dumps*. *Khoroo* Governor Offices took initiative and mobilised local residents to address this issue. With the participation of local community, they were able to 'eliminate waste disposal sites' in 8th *Khoroo* in Khan-Uul District.

   ii) *Community-based Neighbourhood Waste Collection*. Ger area residents took initiative, established saving groups and managed neighbourhood waste collection in some khoroos of central districts. However, the situation changed when the MUB passed a resolution on TUKs to be responsible for waste collection. Due to this, residents stopped their activities and their *Khoroo* 'became full of waste'.

   iii) *Ongoing Efforts*. In some *Khoroos*, for example in 8th *Khoroo* in Khan-Uul District, residents are engaged in waste segregation in order to improve local SWM.

2) *Potential for Community-Led/Based SWM*. GUSIP fieldwork revealed that residents in some khoroos have the 'initiative to establish groups' for community-based SWM but have not received any support from any institution, for example in 22nd *Khoroo* of Songinokhairkhan district. There is a need to explore the ways in which such community initiatives can be harnessed for improving SWM in Ger areas.

Recommendations

The recommendations for improving SWM in Ger areas under GUS are based on: (i) The Study of Solid Waste Management Master Plan for Ulaanbaatar City in Mongolia (year 2020 perspective) conducted by MUB and JICA in 2004-2006, and (ii) discussions and fieldwork conducted in three types of Ger areas under the GUSIP Project.

1) *Waste Collection Fee*. In the Solid Waste Management Master Plan for Ulaanbaatar city developed by JICA and MUB, it is planned to collect the Ger area waste directly from the *khashaas*. Modify the waste collection fee system to financially support the SWM system in the Ger areas (see point 3 below).

2) *Waste Collection Fee Payment*. Conduct advocacy campaigns to build awareness among the Ger area residents to pay the waste collection fee regularly.

3) *Waste Service Fund*. It is important for MUB to manage the Waste Service Fund, which was created in November 2006 and started operation in January 2007. In order to improve overall SWM, it is necessary for MUB to unify the fee collection systems, which are now managed by TUK in each Duureg/District under the Waste Service Fund. By the proper use of this Fund, MUB could allocate newly created surplus (based on increased revenues from improved waste collection system in the built-up city area - a recommendation under the Solid Waste Management Master Plan) for further improvement and expansion of waste collection system in Ger areas.

4) *Vehicle Fleet*. There is a need to purchase new waste collection vehicles, and to replace old vehicles with new ones. Based on the waste composition, the new waste collection vehicles for Ger areas should be dump trucks and for the built-up city area compactor trucks.

5) *Dumpsites*. In the Solid Waste Management Master Plan, it is planned to dispose waste at Naran and Morin Davaa dumpsites and conduct the landfill process there. Therefore, establishment of new dumpsites within Ger areas is restricted and the city is to take measures to reduce the number of existing dumpsites

6) *Community Participation in SWM*. There is a need to explore ways in which communities could be mobilised and organised to improve SWM in Ger areas. The following two activities are proposed:

   i) *Learning from Ger Area Communities*. Document past and ongoing experiences, and lessons learnt in community-based SWM in Ger areas in Ulaanbaatar (as well as in other cities in Mongolia - for example Erdenet).

   ii) *Supporting Ger Area Communities through Demonstration Projects*. Based on experience in Mongolia and relevant international experience[27], design and implement "demonstration projects". This could help up-scale and/or pilot test new ways of community-based solid waste collection in Ger areas where local communities are mobilised and/or organised, and have experience in such efforts.

6.2.2.4 Heating

Issues

Heating is a critical factor for survival in Mongolia where temperatures drop down to minus 45 degree Celsius in winters. The built-up area of Ulaanbaatar city is served by a central heating system that receives heated water from the power plants in winter. Due to the lack of central heating infrastructure in Ger areas, the residents rely on two types of heating systems: i) *wood-and-coal-fired traditional and inefficient cooking-and-heating stoves*, which are used by individual households in their Gers and/or houses, and ii) *heat only boilers*, which are used by kindergartens, schools, and other public or private establishments that are not connected to the central heating system.

The heating issues common to the three types of Ger areas are as follows:

1) *Energy Inefficient Housing*

   a) *Lack of Building Codes and Norms*. There is a lack of building codes and norms for energy efficient construction of new and rehabilitation of existing buildings.

   b) *Urban Poverty*. Even if the norms were available for energy efficient construction of new and rehabilitation of existing buildings, poverty would be a hindering factor in their implementation for poor households.

2) *Wood-and-coal-fired Traditional Cooking-and-Heating Stoves*

   a) *Energy Inefficient Cooking-and-Heating Devices*. The wood-and-coal fired traditional stoves are energy inefficient as they generate less than optimal heat, consume more fuel and result in high levels of air pollution.

   b) *High Cost of Cooking-and-Heating Devices*. The manufacturing cost of cooking-and-heating stoves has more than doubled in recent years due to the worldwide increase in cost of steel. This would impact large-scale shift in cooking-and-heating devices, especially in case of urban poor.

   c) *High Heating Expenditure*. An estimated 5 tonnes of coal and 3 cubic metres of wood are needed to provide heating to one household using one traditional cooking-and-heating stove over one winter season. The wholesale and retail market price of these quantities of fuels is 214,000 MNT (or US$ 186) and 462,000 MNT (or US$ 402) respectively.

[27] Enormous international experience exists in the field of community-based solid waste management.

d) *Lack of Information*. GUSIP fieldwork revealed that Ger area residents lack information on possible options to replace and/or improve the energy inefficient cooking-and-heating stoves.

3) *Heat only boilers*. According to the GUSIP fieldwork, the heat only boilers generate large amounts of ash because they consume huge quantities of wood and low quality coal. According to a census conducted in March 2007, there are 145 heat only boilers of medium capacity and over 800 heat only boilers of low capacity, and most of them are aged, inefficient and costly to run.

4) *Fuel Types and Their Availability*. The issue of fuel is related both to cooking-and-heating stoves and heat only boilers:

   a) *Fuelwood*. A huge quantity of fuelwood is used in the cooking-and-heating stoves, and heat-only boilers. In case of cooking-and-heating stoves, if one household uses 3 cubic metres of fuelwood during a winter season only (i.e. excluding other seasons), then 100,000 households use up to 300,000 cubic metres of fuelwood. This result in large-scale deforestation, related ecological impacts including soil erosion, and a growing number of flood disasters (see point 6 below).

   b) *Low Quality Coal*. A huge quantity of low quality coal is consumed in cooking-and-heating stoves and heat only boilers. In case of cooking-and-heating stoves, if one household uses 5 tonnes of coal during a winter season only (i.e. excluding other seasons), then 100,000 households use up to 500,000 tonnes of coal used. This results in the generation of large quantities of ash, which is a major solid waste management problem (as highlighted in Section 6.2.2.3).

   c) *Pressed Fuels*. 'Pressed fuels' (as they are called locally or fuel briquettes) have been used in recent years with mixed experiences. GUSIP fieldwork revealed that (i) 'pressed fuels' are cheaper than other fuels and therefore popular with poorer households; and (ii) their use is more suited to heat only boilers. For cooking-and-heating, households need special devices and special training to use the 'pressed fuels'. This is because 'there is a potential danger of explosion' if these devices are not used properly.

   d) *Sale of Fuels*. There is a significant difference in the price of fuels bought on wholesale and retail basis (as noted above). The urban poor, who are unable to purchase fuel on wholesale due to their low-incomes and poor savings, therefore end up purchasing fuel on retail basis.

5) *Air Pollution and Health Impacts*. The problem of air pollution and health impacts is related both to cooking-and-heating stoves and to heat only boilers.

   a) *Indoor Air Pollution*. Studies have shown that the use of energy inefficient cooking-and-heating stoves results in 2 to 5 times higher levels of indoor air pollution, especially within Ger and houses, compared to outdoor air pollution.

   b) *Outdoor Air Pollution*. It is the most important quality of life issue for residents in Ulaanbaatar city. Smoke and soot, generated by cooking-and-heating stoves, heat only boilers and other sources in winter months, settles down in the valley. The lack of adequate wind velocity prevents the flow of pollutants from the valley that is surrounded by hills in all directions. This creates a seasonal highly polluted natural air shed, and makes it a most critical human health issue.

   c) *Health Impacts*. Indoor and outdoor air pollution leads to short- and long-term health impacts (see Table 4 below).

Table 4: Health Impacts of Air Pollution in Ulaanbaatar City

Short-term Health Impacts	Long-term Health Impacts
Eye mucous irritation	Chronic respiratory, liver and kidney diseases
Respiratory diseases	Alterations of organs in children
Infectious respiratory diseases	Chronic poisoning
Trachea inflammation	Reduced working capacity
Headache	Weak immune system
Nausea	Chronic cardiac diseases
Allergy	Brain and neural diseases

	Allergy

6) *Deforestation*. The consumption of huge quantities of fuelwood in cooking-and-heating stoves and heat only boilers results in deforestation. As noted above, fuelwood consumption in cooking-and-heating stoves adds up to 300,000 cubic metres per winter season. For such city-based consumption, fuelwood is brought not only from surrounding areas, but also from far-flung forests areas. This has resulted in deforestation in the immediate surroundings of Ulaanbaatar and other locations. Deforestation has its own ecological impacts, which include loss of topsoil - a critical natural resource; and loss of natural habitats of several biological species that are found only in Mongolia's fragile Steppe ecological environment. Moreover, deforestation and loss of topsoil results in increased surface water runoff and associated occurrence of floods, which have increased in number in recent years.

Recommendations

The heating issues common to the three types of Ger areas are:

1) *Promote Energy Efficient Buildings*

   a) *Building Codes and Norms*. Promote the energy efficient construction of new and rehabilitation of existing buildings, and the preparation and implementation of related building codes.

   b) *Focus on Poverty*. Given the prevalence of urban poverty in Ger areas, development of energy efficient building codes and norms will have to take into account the affordability of Ger area residents.

   c) *Pilot Project*s. Implement pilot projects to demonstrate the usefulness of energy efficient building codes and norms, build awareness about them and create and/or trigger demand for energy efficient construction.

   d) *Support the production of construction materials and constructions*

2) *Promote Energy Efficient Cooking-and-heating Stoves*

   a) *Learn from Experience*. Review the lessons learnt under the World Bank Household Stoves Improvement Project and others (development of energy efficient stoves, existing stove improvements, their levels of combustion, and related aspects).

   b) *Replace Energy Inefficient Stoves by Energy Efficient Stoves*. Promote the use of energy efficient stoves. This will require (i) further development of energy efficient stoves; (ii) financial assistance and innovative institutional mechanism for the marketing, delivery and replacement of existing energy inefficient stoves due to their high manufacturing cost.

   c) *Existing Stove Improvements*. Explore the possibility of conducting existing stove improvements wherever feasible, after reviewing the lessons learnt under the World Bank Household Stoves Improvement Project (as in 2(a) above).

   d) *Heating Expenditure*. Experience shows that fuel consumption and heating expenditure can be reduced significantly with the use of energy efficient stoves. An estimated 3 tonnes of coal and 1.5 cubic metres of wood are needed to provide heating to one household using one energy efficient cooking-and-heating stove over one winter season. The wholesale and retail market price of these fuels is 123,000 MNT (or US$ 107) and 219,000 MNT (or US$ 190), which is a net saving of 91,000 MNT (or US$ 79) and 243,000 MNT (or US$ 211) respectively.

e) *Information, Education and Communication.* Develop a system of information, education and communication to provide to Ger area residents all information on options to replace and/or improve existing cooking-and-heating stoves.

3) *Heat only boilers*. Conduct a study to (i) examine the amount of fuelwood and coal used in heat only boilers, (ii) estimate the amount of pollution generated, and (iii) explore the possibility of improving their design. Implement the recommendations of the study as feasible.

   a) Reduce air pollution and energy losses through repair and/or replacement of heat only boilers in Middle and Peri-urban Ger areas at the earliest[28].

   b) Reduce the number of heat only boilers (especially in the Central Ger areas following their "Redevelopment").

   c) Reduce air pollution through improvement of fuel quality.

4) *Promote Fuel Shift and New Heating and Cooking Devices*

   a) *Research and Development*. Support research on and development of new less-polluting fuels, including the 'pressed fuels' (or fuel briquettes).

   b) *Promote Electricity-based Heating.* Shift from fuelwood and coal based heating to electricity based heating. This will require addressing the issue of the cost of electricity-powered heaters and electricity tariff for the urban poor.

   c) *Promote Electricity-based Cooking*. Shift from fuelwood and coal based cooking to electricity based cooking. This will require addressing the issue of the cost of electricity-powered cooking-stoves and electricity tariff for the urban poor.

5) *Air Pollution and Health Impacts*. The above sets of recommendations, if implemented, would lead to reduction in indoor and outdoor air pollution, and related health problems. Therefore, it is very important to establish monitoring systems:

   a) *Air Pollution Monitoring System*. Put in place a monitoring system to regularly measure indoor and outdoor air pollution.

   b) *Health Impact Monitoring System*. Put in place a monitoring system to regularly collect data on various indicators related to health impacts of air pollution in order to monitor progress in the reduction of air pollution and related measures.

6) *Deforestation*

   a) *Conduct Studies* which: (i) quantify the amount of fuelwood consumed in Ulaanbaatar city and its Ger areas; (ii) collect data on the location of forests and woodlands which are getting depleted due to fuelwood consumption; (iii) analyse the loss of forest and woodland cover over past years; and (iv) make appropriate recommendations including community-based forest management.

   b) *Afforestation*. (i) Identify and prioritise areas for afforestation, and (ii) support active afforestation in partnership with local communities.

   c) *Forest Resource Management Monitoring System*. Put in place a monitoring system to regularly collect data on the status of forests and monitor progress in afforestation.

6.2.2.5 Roads and Footpaths

Issues

[28] The use of the automatic boilers "Carborobot" manufactured in Hungary by the "Tushigt Khangai", "Khoeulaa Khuu" and "Anu Service" companies under Heating Stoves Utilization and Coordination Department have proven to be effective in reducing the air pollution and are cost effective. (HSUCD)

Road and footpath infrastructure in Ger areas can be divided into three types:

1) Arterial roads that provide access from built-up city to Ger areas. The main arterial roads run across the Central, Middle and Peri-urban Ger areas from the city centre to the urban periphery, and meet the transportation needs of Ger areas.

2) Roads within Ger areas. Except for a few paved roads, most roads within Ger areas are unpaved, and they are almost entirely unconsolidated rough earthen roads. These roads are poorly bridged, lack proper drainage, and some are too steep for vehicular access. This is because of *ad hoc* land allocation for Ger plots in response to a fast growing Ger area population due to rapid in-migration. Moreover, public right-of-way is sufficiently wide for roads, and in some cases, it is too wide.

3) Footpaths. Footpaths are equally important to road infrastructure in Ger areas. Most importantly, footpaths serve to transport water carts from the kiosks to Ger plots. As there are no major transportation services within Ger areas, footpaths serve pedestrian traffic in all weather conditions.

The main issues related to road and footpath infrastructure are:

1) *Arterial Roads to Ger Areas*. Some roads either are in bad condition or end before the periphery of Ger areas. Consequently, public transportation vehicles are unable to serve the far reaches of Ger areas, resulting in physical hardship for residents who have to walk long distances to the nearest bus stops. In addition, they bear financial costs for travelling in privately owned microbuses that charge higher fares.

2) *Inadequate and Poor Road Infrastructure within Ger Areas*. Most of the roads within Ger areas are unpaved. In winter and after snowmelt, the condition of unpaved earthen roads worsens as they become slippery and muddy.

3) *Difficult Access*. Ger areas have difficult access due to the following factors:

   i) *Haphazard layout of Ger areas* has resulted in roads that are not straight, have irregular width, and are often too long without intersections. A large number of them often end in cul-*de-sacs.* This problem is severe in Central Ger areas.

   ii) *Illegal occupation of public right-of-way/ land reserved for roads* results in narrow and irregular width of roads that further hinders access.

   iii) *Seasonal variations* create problems of access. Due to snow and rainfall in winter when temperatures drops below -45 degree Celsius, road surfaces freeze and become slippery. At the end of winter , due to snowmelt, the road surface becomes muddy. The undulating landscape adds to difficulties of access.

   iv) *Lack of bridges* worsens the problem of access in Ger areas, where the landscape is undulating and criss-crossed by natural drainage channels.

4) *Difficult Access and Related Problems*. Due to difficult access, residents suffer the following problems:

   i) *Lack of Access to Basic Urban Services*. Owing to the problem of difficult vehicular access in winter months, water supply and solid waste collection services are seriously affected in several Ger areas. Water supply to kiosks by trucks and collection of solid waste using trucks are affected due to poor access.

   ii) *Traffic Jams*. Ger areas often experience traffic jams when the roads are inaccessible due to bad weather, muddy and slippery roads in winter, undulating topography, haphazard layout, narrow public right-of-way, or a combination of these factors.

5) *Drainage along Roads*. The issue of proper drainage along roads is separate from the drainage channels and gulley that convey surface run-off from higher hill slopes within and on the periphery of Ger areas. The problem of drainage along roads owes to the stagnant rainwater or unhygienic disposal of grey water (See sanitation section above).

6) *Street Addresses, Emergency Services and Access*. Although street addressing has been completed, it is far from satisfactory. Owing to this and problems of access, emergency vehicles, including fire brigades, have limited and/or difficulties of access to specific locations. GUSIP fieldwork revealed

that a household member was required to meet 'emergency services and assist them to their *khashaas*'.

7) *Road Safety*. This is an important concern in Ger areas owing to the following factors:

   i) *Lack of proper road signs* often result in accidents, and children and elderly are most vulnerable.

   ii) *Lack of social services* such as schools results in children having to cross wide roads. This is an important road safety issue.

8) *Footpaths, Footbridges, Pedestrian Access and Road Safety*. The problem of pedestrian access and road safety is caused by:

   i) *Lack of footpaths* in Ger areas where roads are unpaved, muddy or slippery; and

   ii) *Lack of footbridges* that are needed to provide pedestrian access across/over natural and constructed drainage channels.

Recommendations

The following recommendations apply to three types of Ger areas.

1) *Conduct a study to identify priority sections for improvement*. Prioritised sections will include those that connect water kiosks, solid waste collection and wastewater collection points (related to bathhouses, schools, hospitals, etc). These will require construction or improvement of bridges and culverts in prioritised sections.

2) *Road Infrastructure Improvement*. Carry out road infrastructure improvement of the prioritised sections using a combination of asphalt roads, grading and gravelling of the public right-of-way, and related drainage improvements. This will eliminate stagnant water and the problem of localised drainage. It will also help provide passable surface for the minimal vehicular and predominantly pedestrian traffic.

3) *Guidelines for Community Roads*. In improving Ger area roads, the guidelines prepared by JICA and partner Mongolian and Japanese institutions should be utilised[29].

4) *Footpaths and Footbridges*. Through consultation with *Khoroo* Governors and communities, identify and prioritise the footpaths and footbridges that need to be built or improved in the different Ger areas.

5) *Financial Resources*. Mobilise financial resources from various sources in order to build the prioritised roads, bridges/culverts, footpaths and footbridges.

6) *Institutional Improvement*. Evaluate the usefulness of establishing a *Ger Areas Roads Maintenance Division* within the Roads Department of MUB. This new division should exclusively focus on and specialise in building and maintaining Ger area road infrastructure including roads, bridges/culverts, footpaths and footbridges.

6.2.2.6 Transportation Services

Issues

Transportation services in Ger areas are provided by: (i) Ulaanbaatar city public transportation system using buses and trolleybuses, and (ii) privately-owned and operated microbuses (generally with a capacity of 15-20 passengers). In the public buses, adults pay full fare, children pay a discounted fare, and the elderly are provided free service. The main transportation issues in Ger areas are related to the short public transport routes; location of bus stops; lack of rolling stock; public transportation service

[29] These guidelines are available from JICA under the title, *Pavement Manual for Community Road with Bituminous Surface Treatment* (September 2006).

timetable; regulation of privately owned and operated micro-buses; tariff, poverty and transportation services; lack of plans for an integrated public transportation system; and lack of required investment. These are discussed below.

1) *Shorter Public Transport Routes and Arterial Roads*. The designated bus and trolley-bus routes stretch from the city centre to Ger areas along the arterial roads, and often terminate abruptly due to the following reasons:
    a) Road conditions are bad and restrict movement of big vehicles such as buses.
    b) Since Ger areas have grown rapidly, in some cases the bus routes end before the far reaches of Ger areas due to the abrupt ending of arterial roads.
2) *Location of Bus Stops*. The problems related to bus stops are:
    a) *Distantly located*. Some bus stops are distantly located from each other. This results in long walking distances, especially for children and elderly.
    b) *Poor condition*. Some of the bus stops are very old, in poor condition and need repair or reconstruction.
    c) *Lack of land*. Bus stops are distantly located due to the lack of land to locate them at convenient distances.
3) *Lack of Rolling Stock*. Public transportation suffers from very old and/or dilapidated buses and trolleybuses.
4) *Public Transportation Service Timetable*. There are two problems related to this:
    a) *Shorter timetable*. Public transportation has limited service hours. Buses stop plying at 20:00 hours.
    b) *Timetables not followed*. Some buses and trolleybuses are unable to keep to their timetables.
5) *Regulation of Privately Owned and Operated Microbuses*. The microbuses have come into operation owing to the issues mentioned above (1 to 4). They ply between the city centre and far reaches of Ger areas, and serve populations: (a) beyond the public bus/trolleybus routes, and (b) difficult to access because of steep slopes, undulating topography or narrow lanes. However, due to unclear regulation, microbus services have the following issues:
    a) *Higher Tariff*. Microbuses charge higher fares that are double or more than double the fare charged by public buses. For example, while public buses charge 200 MNT per trip, microbuses charge 400 MNT or more per trip.
    b) *Refusal to Serve Children and Elderly*. Microbuses refuse to service children and elderly. If they agree to serve children and elderly, they charge them the full fare.
6) *Tariff, Poverty and Access to Transportation Services*. These interrelated problems unfold in various ways in Ger areas:
    a) Some residents spend up to 2,000-2,500 MNT (US$ 1.7 to 2.2) per day on travel because if poor public transportation services.
    b) Urban poor in Ger areas lack enough disposable income and are unable to access/ afford either public or private transport services.
    c) Poor in-migrants, who have settled in remote Ger areas are unable to access the transportation services. Only microbuses serve residents in such remote areas.
    d) The higher tariff of transportation services, especially those provided by microbuses, mostly affects children and elderly. Although children and elderly travel by foot in summer, the conditions get worse in winter months when temperatures drop down to minus 45 degree Celsius. This especially affects students who need to travel to universities and colleges in the city centre.
7) *Lack of Integrated Public Transport System Plan*. Ulaanbaatar lacks an integrated public transport system plan, which is required because of the rapid expansion of the city and its Ger areas.

8) *Lack of Investments*. Ulaanbaatar lacks financial resources for the purchase of new vehicles, proper maintenance of the existing stock (vehicles), maintenance of bus depots (commonly known as "bus parks"), construction of new bus stops and the like.

Recommendations

The following recommendations apply to all three types of Ger areas:

1) *Plan the Arterial roads together with bus stops*. Urban public transportation services and their development greatly depend on development of the road network. Therefore, it is essential to plan the arterial roads together with bus stops for the new settlements areas and Ger area zones, and secure its implementation.

2) *Improve and Extend Arterial Roads*. Given the problem of access to public transportation services, this is a priority. The main arterial roads need to be improved and extended in length to serve the far reaches of Ger areas.

3) *Improve Provision and Condition of Bus Stops*. This will include:

   a) *Revise Norms for Bus Stop Provision*. Since Ger areas are low-density settlements, they need suitable norms for infrastructure and services including bus stops. These norms need to be revised for the "new" Ger areas, considering their conditions, and in the transportation needs of children and the elderly.

   b) *Build Additional Bus Stops*. As per the revised norms and/or current needs, build additional bus stops, especially in response to the needs of children and elderly.

   c) *Improve Bus Stops*. This may require repair or reconstruction of old and dilapidated bus stops.

   d) *Resolve Land Issues*. In the absence of land reserved for additional bus stops, in some cases, land will be needed for their construction. This will require District and *Khoroo* Governors to work with District Land Offices, and arrange for land allocation for additional bus stops.

4) *Improve Rolling Stock*. This is a citywide issue and requires the following actions:

   a) Take stock of existing public transportation vehicles, including buses and trolleybuses, to determine the requirement for additional vehicles.

   b) Prioritise needs; especially with regard to the development of an integrated public transportation system plan (see point 7 below).

   c) Mobilise resources for the purchase of new vehicles with regard to prioritised needs.

5) *Public Transportation Service Timetable*

   a) Examine the possibility of extending public transportation timetable in view of the increased demand related to the growth of Ger areas' population and spatial expansion (see point 7 below).

   b) Put in place regulatory mechanisms to ensure buses and trolleybuses keep up to their timetables.

6) *Improve Regulation of Privately Owned and Operated Microbuses*. The regulatory framework ought to focus on issues including current higher tariff charged by microbuses (compared to public buses), refusal to service children and elderly, designated routes, licensing, timetables, safety, and other related issues.

7) *Tariff, Poverty and Access to Transportation Services*. Addressing these issues requires separate approaches with regard to public and private transportation services.

   a) *Public Transportation Services*. Analyse the current subsidies in place for discounted fare, and explore the possibility and feasibility for extending the system to cover poor households.

   b) *Privately Owned and Operated Transportation Services*. Analyse the current system of tariff of private operators, and explore the possibility and feasibility of extending discounted tariffs (subsidies) for students, elderly and the poor.

8) *Financial Resources and Institutional Mechanisms*

a) *Financial Resources*. There is an urgent need to mobilise resources from various sources to address the current resource constraints, and to prepare and implement the 'Integrated Public Transport System Plan'.

b) *Institutional Mechanisms*. Some of the resource constraint can be addressed by exploring the possibility and suitability of innovative institutional mechanisms for the public transportation sector in Mongolia.

6.2.2.7 Street Lights

Issues

Although lighting for streets, roads and squares in Ulaanbaatar have been developed since 1970, Ger areas lack streetlights due to their official status of temporary settlements. The lack of streetlights in Ger areas leads to more crimes. The lack of optimal options for street lighting in terms of approaches, technologies and maintenance hinders decisions for street lighting. The related issues in Ger areas are:

1. *Lack of planning to install streetlights in Ger areas:* As Ger areas are not planned, the street light system is also not planned. Consequently, streetlights have been installed in response to the demands of expanding settlements.
2. *Low investments:* The investments for streetlights in the city budget are not enough for the installation and maintenance of streetlights in Ger areas.
3. *Insufficient electricity sub-stations* further limit streetlight installation in Ger areas.
4. Due to the *lack of responsible bodies for the maintenance of the streetlights in Ger areas*, most of the streetlights malfunction, and are robbed and/or broken.
5. *Utilization costs of the streetlights in Ger areas:* Although Ger area residents want to install streetlights, they cannot do so due to the costs.
6. *Height of streetlight poles:* The streetlight poles are very tall and therefore cannot illuminate the streets and roads adequately and have poor lighting quality.
7. *Outdated equipments and lack of proper equipments and materials for streetlight maintenance* is one of the main reasons for poor maintenance of streetlights.
8. *Chaotic expansion and remote location of Ger areas* makes access and maintenance by professional organizations technically difficult and cost intensive.
9. *Increase of traffic:* The increase in road traffic in recent years makes it difficult to conduct streetlight maintenance works during the day.

Recommendations

The following recommendations are common for the three Ger areas:

1. Address Central Ger area streetlight issues through *comprehensive redevelopment*.
2. *Increase the number of electricity sub-stations* to address power source issues for Middle and Peri-urban Ger areas.
3. *Develop the optimal technical solution for Ger area streetlights*.
4. *Promote a mechanism wherein resident groups are involved and/or made responsible for the Ger area streetlight maintenance and utilization*.
5. *Utilize new technologies and equipments for the streetlights.* New technologies and equipments are adaptable in peri-urban Ger areas, for example, in some areas solar powered lights have been installed and used.
6. *Use bulbs with minimal electricity consumption.*

7. *Replace existing cables with SIP cables.* These cables have protection shells that will provide long-term use and prevent damage.
8. *Build Capacity of the responsible body* for streetlights utilization and maintenance.
9. *Promote new technologies and equipments related to streetlights*.

6.2.2.8 Flood Protection Facilities

Issues

The most frequent natural disaster in Ulaanbaatar is floods, and in recent years, the frequency of downstream floods, and rain flood power, damage and coverage have been increasing. This is related to climate change related increase in rain and snow falls, overgrazed and eroded pastureland, reduced forest cover, and land destruction and desertification. Moreover, ongoing in-migration has led to establishing of Ger areas in flood prone areas. As more residents settle in flood prone areas, a large section of the city population is at risk from natural disasters. Most of the flood protection facilities are damaged and need to be repaired, and new ones are required in some areas. The situation is worsened by the lack of investments in this sector. Studies show that due to floods in the last 10 years, 16 people died, 50 households lost their houses, and 120 households were flooded.

Constraints:

1. *Aged flood protection facilities.* Most of the flood management structures were built during 1960-1980s, and they had a number of problems: (a) calculations and designs were not optimal and were constrained by the budget limits; (b) they were partially built; and (c) many of them have aged, are damaged, and filled with solid waste, making it impossible to protect the city from floods.
2. *Settlements in the flood-protection facility area*. Due to the unplanned expansion, new Ger-areas have been established in flood prone areas, including river channel and flooding zones, along gullies and streams on hills and mountains, and catchments of rivers and streams (see Table 5 below). As there is little habitable land available for new Ger-areas, expansion in such flood prone areas is likely to increase.
3. *Settlements in flooding zones*. The settlements in Central Ger areas were enabled by blocking flood protection channels and increasing density in flood prone areas. This has resulted in increase of flood related risks.
4. *Waste dumped into channels and drainages*. Citizens and companies violate law and regulations by dumping household and construction waste on steep slopes and into drainage channels, damaging flood management facilities/structures.
5. *Manmade constraints and damage to flood protection facilities.* Drainage facilities are damaged, breached, filled with ash and waste due to anthropogenic activities such as building of garages, digging of drainage channels, construction on drainage channels, and filling up of drainage channels due to constant movement of vehicles.
6. *Expansion of settlement areas.* Maintenance and repair of flood control structures is limited due to the expansion of Ger area settlement.
7. *Lack of budget for repairs*. No budget was specified for drainage repair for past 10 years.
8. *Lack of flood protection zone*. Due to insufficient land management, and location of plots (*khashaas*), buildings and other structures close to drainage facilities, there is limited space available for a flood protection zone.
9. *Low investment interests.* Flood control and drainage facilities are built for emergencies and hence have no profit margin. Therefore investors have little interest in investing this sector.
10. *Citizens refuse to follow the laws.* Citizens do not obey laws, resolutions and decisions related to flood protection and/or settlement in flood prone areas.

11. *Flood drainage facility designs.* Most flood protection facilities were built after floods occurred in the past. They are not based on studies, technical norms and standards, and optimal design solutions for management of floods.

12. *Insufficient flood protection facilities due to the lack of comprehensive approach to urban and infrastructure issues.* Due to lack of proper drainage and flood control infrastructure, and low capacity of existing infrastructure to contain/ divert floodwaters, avoidable floods have occurred in Ulaanbaatar, causing serious damage to lives and settlements.

13. *Aged underground rainwater drainage*. Underground rainwater drainage lines are aged. Lattice of filter wells are stolen, and are often clogged and have small carrying capacity, leading to road damage by floodwaters.

Table 5: Floods related Characteristics of Three Types of Ger Areas

Indicators	Central Ger area	Middle Ger area	Peri-urban Ger area
Length of flood protection channel (km)	35.2	73.0	4.8
Number of households settling in flood danger zones	1,069	963	205
Number of floods happened in last 10 years	17	14	2

Recommendations

For all three Ger areas:

1. Rationalize the flood drainage facility designs based on detailed studies.
2. Develop the flood protection facility design based on optimal solutions for flood control, drainage facilities and infrastructure.
3. Construct and utilise the flood protection facilities in accordance with their designs.
4. Construct hidden (or underground) flood protection devices (tunnels, pipes) in city centre and Central Ger areas.
5. Eliminate dumping of household and industrial solid waste into drainage channels and dams by improving solid waste management through the involvement of citizens, other entities and organisations.
6. Increase awareness on flood hazard prevention and self-protection of citizens.
7. Establish monitoring and maintenance system form flood control/ protection facilities/ structures in partnership with citizens and their organisations.
8. Prioritize flood control/ protection facilities/ structures as the city's special policy objective, and from the city budget, specify yearly investments for the maintenance of existing facilities/ structures and construction of new ones.
9. Damaged facilities should be repaired by professional organisations.
10. Build capacity of institutions and human resources responsible for the maintenance of flood protection facilities/ structures.
11. Relocate households settled in flood risk zones to safer areas.
12. Define the buffer zones for flood protection facilities/ structures and drainages, and conduct land allocation in accordance with it.

Middle Ger area:

1. Conduct studies to define the priority areas where flood control channels and protection facilities/structures need to be built.

2. Define and physically mark the buffer zones of 10-15 metres wide with regard to steep slopes, drainage channels and flood drainage facilities in order to restrict households from settling in/near flood risk zones.
3. Fortify steep slopes and drainage channels within and outside Ger areas.

Peri-urban Ger area:

1) Conduct studies to define the priority areas where flood channels and protection facilities/ structures need to be built.
2) Define and physically mark the buffer zones of 10-15 metres wide with regard to steep slopes, drainage channels and flood drainage facilities in order to restrict households forming new settlements close to them.
3) Develop flood control plans based on detailed studies, and construct new flood protection facilities/ structures.

6.2.2.9 Emergency Services

Issues

Resulting from the in-migration led population growth, unplanned Ger areas are a cause of increasing concern as they are vulnerable to natural and human-made disaster risks. Some Ger areas are located in natural disaster zone threatening the lives of many residents. In addition, Ger areas are now increasingly seen as the main source of air, soil, and water pollution and an increase and spread of respiratory and water-borne diseases.

Ger areas face the following constraints regarding the provision of emergency services:

1. *Poverty in Ger areas*. One of the main reasons for fire incidents in Ger areas is the use of cheap and low quality home appliances due to poverty and lack of knowledge among recent in-migrants about safe use electricity.
2. *Delays in information about fires*. Buildings in Ger areas, whether owned by private entities, organizations or households, are not equipped with heat fluctuation sensors. Thus, fire alarms and emergency services are delayed causing loss and damage to citizens and property.
3. *Location of Ger areas*. Due to the haphazard expansion of Ger areas, including on steep slopes and hills, they are in general, difficult to access by emergency services. The access is more difficult during heavy rains and snow.
4. *Traffic jams*: During the day, emergency service vehicles are often stuck in traffic jams, especially during peak hours, delaying the response to emergencies.
5. *Shortage of rescue equipments and human resources*. The rescue equipment and human resources in the Emergency Services Department are inadequate for responding to emergencies and disasters.
6. *Low capacity of human resources*. Most staff of the Emergency Services Department is trained to fight fires, and hence lack skills required for responding to other disaster/ emergency situations.
7. *Lack of coordination among specialized agencies and organizations*.
8. *Low legal knowledge and preparedness*. There is a lack of advocacy and public awareness and training on emergency and disaster risk prevention in general, and for Ger area residents. Consequently, citizens pay little attention to emergency and disaster issues.

Table 6 shows the Ger area disaster study based on emergency cases registered in 2004-2006 in the Capital city Emergency Department.

Table 6: Frequency of Emergency Cases in Ger areas of Ulaanbaatar: 2004-06

No	Disaster type	Central Ger area	Middle Ger area	Peri-urban Ger area
1	Object fire	686	1036	271
2	Chemical accident	3	5	-
3	Industrial accident	-	-	-
4	Storms	4	14	32
5	Cases of human epidemics	2	2	1
6	Cases of animal epidemics	-	3	1
7	Incidents of Floods	17	14	2
	Total	712 34.0%	1,074 51.3%	307 14.7%

Source: Emergency Services Department, Municipality of Ulaanbaatar

Table 7: Emergency Risks in Three Types of Ger Areas in Ulaanbaatar city

Indicators	Central Ger area	Middle Ger area	Peri-urban Ger area
Number of emergency calls registered (2004-2006)	712	1,074	307
Number of households settling in flood danger zones (2007)	1,069	963	205
Number of household fire cases (2004-2006)	686	1,036	271
Number of households settling in chemical danger zones (2007)	330/1650	60/180	40/200

Source: Emergency Services Department, Municipality of Ulaanbaatar

Recommendations

1. Define and physically mark the buffer zones of 10-15 metres wide with regard to steep slopes, drainage channels and flood drainage facilities in order to restrict households forming new settlements close to them.
2. Relocate households settled in flood risk zones to safer areas.
3. Develop mathematical models for the possible flood disaster risks, and based on the results of mathematical modelling, develop flood protection structures' design.
4. Develop optimal solutions for flood protection structures' system design based on detailed studies.
5. Construct flood protection structures according to the improved designs with the help of responsible professional agencies and participation of Ger area communities.
6. Plan Ger area settlement in view of their future access to and the provision of emergency services.
7. Through proper land management, put in place disaster risk mitigation measures in Ger areas that have previously been affected by disasters and/or are at high risk.
8. Undertake fire prevention measures based on an analysis of fire cases, provide proper electricity connections and develop norms for household appliances, and monitor these activities.
9. Establish special roads/ lanes for emergency services
10. Improve *khashaas* and street addressing in Ger areas, and provide updated *khashaas* and street addresses to Emergency Service Department on an ongoing basis.

11. Conduct detailed evaluation of earthquake risks of Ulaanbaatar, and put in place adequate risk mitigation and management measures[30].
12. Develop earthquake resistant designs of buildings and construct buildings in accordance with approved designs and technologies.
13. Improve the material basis (with emergency rescue equipment) and build capacity of human resources in agencies responsible for emergency prevention and rescue services, and establish emergency service stations in remote areas
14. Strengthen inter-departmental cooperation system of relevant agencies for disaster risk prevention, mitigation and management.
15. Develop a disaster prevention, mitigation and management master plan for Ulaanbaatar with required focus on Ger areas.
16. Specify annual budget allocation from the city budget for implementation of disaster prevention, mitigation and management master plan.

6.2.2.10 Electricity

Issues. Most in-migrants settle in the existing Ger areas or establish new ones. To meet their electricity requirements, most residents make illegal, chaotic and unsafe connections to the electricity lines. About 8% of the total Ger area households are not provided with electricity. Electricity related issues in Ger areas are:

1. *Households settled in protection zones of high-tension lines*. According to safety norms, no building or settlement is allowed within 2 metres of 6-10 kW electricity lines. Despite the risks, due to uncontrolled land allocation and high population density of central and middle Ger areas, many households have settled under such high-tension lines. Currently about 2,000 households are living under high-tension lines and face a life threatening risk.
2. *Incessant need to provide unplanned settlements with electricity*. Due to the unplanned expansion of Ger areas in locations with no electricity or with difficult access, the provision of electricity to households in such settlements is complicated and challenging issue cited frequently by MUB. Moreover, as a basic services in a country with a cold climate, electricity is provided even to illegal settlements. For instance, in 2006, over 10,000 illegally settled households were provided with electricity connections. In providing electricity to illegal settlements, the budget for the maintenance and improvement of electricity lines in legal settlements is reduced. This further emphasises the need for formal recognition of unplanned settlements.
3. *Low quality of electricity provision*. The increasing number of households settling in Ger areas affects the quality of electricity provision to households who have regular/ legal connections. Newcomers access electricity through their neighbours' connections, which overloads the cables and transformer capacity, and results in reduction and/or fluctuation in voltage and quality of the electricity distributed to the Ger area households.
4. *Insufficient sub-stations and transformers*. The installed capacity of the existing sub-stations and transformers does not cover the electricity needs of the increasing number of households in ever-expanding Ger areas. Already the number of households connected to one transformer has exceeded the norms. This results in low voltage supply with high fluctuation. As a result, home appliances do not work properly, and sometimes are damaged. Moreover, the excessive number of connections from one electricity pole is the main source of fires in Ger areas[31].
5. *Lack of land to install new transformers.* In central and middle Ger areas, land to install new transformers is not available and will require realigning of Ger areas layouts.

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[30] See Hiroshi Kawase and Madhab Mathema (2000) *Earthquake Disaster Risk Management Scenario for Ulaanbaatar City, Mongolia*, UN-HABITAT, Fukuoka, Japan.

[31] About 27% of the total fires in the capital city occurred due to the improper electricity connection and use of electric appliances.

6. *Electricity loss*. It is common among Ger area consumers to connect to the electricity lines without meters, or to adjust or stop them.
7. *Electricity bills not paid on time*. Electricity distribution agencies incur losses due to delayed payments of electricity bills by Ger area residents,.
8. *High tariff of electricity*: Compared to the electricity tariff in the built-up area of the city, electricity tariff is higher in Ger areas. GUSIP fieldwork revealed that due to the reduced voltage, electricity consumption is high in Ger areas and results in higher bills. Households without meters are charged with high bills. Moreover, electricity loss is imposed on consumers and increases the bills compared to actual consumption.
9. *Due to insufficient investments*, maintenance and improvement of electricity infrastructure and provision suffers.

Recommendations

1. Redesign the layouts of Ger areas and relocate plots under/near high-tension lines and potential risk areas.
2. Address the problem of electricity provision to illegal settlements in accordance with the urban development policy of the city.
3. Conduct detailed studies on the quality and sufficiency of electricity provision to existing Ger areas, and based on its results, define the location and capacity of the additional sub-stations.
4. Develop Ger area electricity improvement plan together with the realignment of existing Ger area settlements, and reserve land for electricity infrastructure and its protection (buffer) zones.
5. Implement the Ger area electricity improvement plan in accordance with the Ger area development policy.
6. Develop the standards on the Ger area electricity lines equipments and secure the implementation.
7. Develop and implement new approaches and technologies to reduce electricity losses and improper use.

6.2.2.11 Health

Issues. There are 5 outpatient dispensaries and Health Centre branches near the Ger areas in Ulaanbaatar. Health centres and Hospitals serve all Ger-area residents. Of the 116 family clinics in 8 districts, 107 are concentrated in 6 central districts. Although the family clinics are properly located to serve the population in their coverage area, the large population load per physician and expanded coverage affects service demands of the Ger area population. Health related issues in Ger areas are as follows:

1. *Poor khashaas and street addressing* makes emergency access difficult for ambulances.
2. *Location*. Due to the undulating landscape of Ger areas, the access of vehicles is restricted, especially in winter season.
3. *Air, soil, water pollution and poor water supply* increase the possibility of spread of diseases among Ger area residents. Studies show that respiratory (363.16 promile and contagious stomach (334.73 promile) diseases are most frequent. The disposal of wastewater and solid waste in the streets are another source of diseases.
4. *Lack of land to build new clinics*. Due to the lack of planning in Ger areas, land is not reserved for construction of family clinics and hospitals. Hence, it is almost impossible to build these facilities without realigning Ger area layouts.

5. *Inadequate knowledge and skills of family clinic doctors and nurses, and lack of responsibility*. Due to the inadequate knowledge and skills of family clinic doctors and nurses, Ger area patients are sent to the health centres without any first aid. Ger area residents note that doctors and nurses are interested in serving their own relatives or residents who are able to pay for the health services[32].
6. *Comparatively higher number of patients served by one family clinic doctor*. Although as per norms, a doctor in a family clinic should serve 900-1,500 patients, the actual number of patients served by one doctor is 2,000-4,000 in Ger areas, that is, more than double the norms (see Table 8 below).
7. *Family clinics lack medical equipments*. GUSIP fieldwork revealed that family clinics serve over 200 patients a day, they are overloaded and lack medical equipments and tools, which limits the provision of adequate health services. As a result, patients with chronic diseases or those seeking first aid are sent to the health centres.
8. *Long distances to and insufficiency of health centres, and urban poverty*. Due to the lack of hospitals and clinics that provide tertiary health care in close proximity, residents have to travel to health centres located in the built-up area. This is not only inconvenient but also expensive due to travel costs. Thus, low-income households that cannot afford bus fares are unable to access medical services at health centres.

Table 8: Sufficiency of Health Care Services in Ger Areas

Types	Central Ger area	Middle Ger area	Peri-urban Ger area
Number of family clinics	22	21	0
Number of health centres	0	0	0
Number of residents served per family clinic	NA	2,000-13,000	NA

Recommendations

1. Improve Ger area *khashaas* and street addressing, and give emergency (ambulance) service providers with updated *khashaas* and street information on a constant basis.
2. Redesign the settlements' layout and relocate plots to secure land to build additional family clinics and hospitals in existing Ger areas. Redevelop land management planning considering future access of the new Ger areas emergency health services.
3. Reduce health risks related to: (a) air pollution through addressing the heating issues; (b) water and soil pollution through improved wastewater and solid waste management; and (c) poor hygiene conditions through improved water supply and sanitation.
4. Conduct detailed studies on:
    a) Health service needs, and family clinic service quality and sufficiency every year. Define the needs to build more clinics and health centres and specify in the yearly land management plans of the capital city and districts.
    b) Ger areas living conditions, and improve monitoring of the living conditions and their health impacts on Ger area residents.
    c) Inform the Ger area development policy with the results of the above studies.
5. Develop a health services improvement plan for Ger areas and ensure its implementation.
6. Improve first aid services, their sufficiency and quality by improving the skills and responsibility system of doctors and nurses through training.
7. Improve material basis and equipment provision of family clinics in Ger areas.
8. Establish tertiary health care centres in Ger areas.

[32] UN-HABITAT GUSIP Project fieldwork (2007).

9. Build a system of health counsellors and/or trainers on improving basic health and hygiene among Ger area households.
10. Provide the Ger area population with proper information and know-how to bring forth behavioural and attitudinal changes to address environmental and public health issues through broad-based advocacy campaigns making optimal use of face-to-face meetings in Ger areas and media.

6.2.2.12 Education

Issues. Due to the rapid in-migration led growth of Ger area population, the schools and kindergartens in the areas cannot meet the increased demand, and are unable to provide quality education to Ger area students. The education related issues in Ger areas are:

1. *Insufficient number of schools and kindergartens*. Ger area expansion and population growth has caused an increase in the number of students. Due to the inadequate numbers of schools and kindergartens, Ger area children have to attend schools and kindergartens located in the city centre.
2. *Class load exceeds the norms*. Due to the insufficient number of schools in Ger areas, the class load of schools in Ger areas and nearby built up areas have exceeded the norms. Average number of students per class is 40-60 in these schools. This has negative impacts on the quality of education (see Table 9 below).
3. *Poor quality of human resources*. Due to the low salary and lack of housing provision for teachers, there is lack of qualified/experienced human resources for teaching in schools and kindergartens of Ger areas.
4. *Schools and kindergartens in Ger areas are uncomfortable*. Schools and kindergartens in Ger areas rely on heating from heat-only boilers, tank water and unreliable electricity, making the environment uncomfortable.
5. *Lack of land for construction of new schools and kindergartens*. Lack of land for construction of new schools and kindergarten in Ger areas is a big constraint.
6. *School dropout percentage is high*. Some parents cannot afford bus-fare of children who attend schools located at very long distances, and hence students from peri-urban Ger areas walk up to 3 km to attend schools. Being late to lessons, and lacking money to buy uniforms and other school items, the high school dropout rate is high in some Ger areas.

Table 9: Number of schools and kindergartens in Ger areas

Types	Central Ger area	Middle Ger area	Peri-urban Ger area
Total number of schools	15	12	
Children number in one class	45	40-50	55-60
Farthest distance to schools (km)		1	3
Average distance to schools (km)		0.5	1.5
Number of kindergartens	17	11	1

Recommendations

1. In order to increase the number of schools and kindergartens in Ger areas:
    a) Conduct detailed studies on the number of children attending schools and kindergartens, potential demand and requirements for new schools/kindergartens.
    b) Renew the service coverage area of current schools and kindergartens.
    c) Plan new schools and kindergartens based on studies, service coverage area and Ger area upgrading plans.
    d) Reserve land for the construction of schools and kindergartens, and approve such land allocation in the yearly land management plans of the Ulaanbaatar and its districts.

2. Specify land for the construction of schools and kindergartens in the planning of new Ger areas and implement the plan through the reservation of land for such use.
3. Take measures to address housing needs of teachers and staff by constructing housing near schools/ kindergartens and implement in stages.
4. Improve the ethics, knowledge and skills of the teachers.
5. Develop optimal solutions for heating, water supply and electricity provision, and implementation them to establish comfortable studying environment for the children.
6. Address the land issues for construction of new schools and kindergartens through re-planning and land management in central and middle Ger areas with high density.
7. In order to reduce the school dropouts in Ger areas:

   a.Provide children from vulnerable families and families where three children attend secondary school, with necessary school items and books.

   b. Conduct study on children and youth who dropped out of schools and renew the list constantly.

   c.Establish vocational training and non-official education centres in Ger areas.

   d. Introduce training to (i) provide education for people who lack secondary education; (ii) improve vocational skills; and (iii) improve the secondary education of the population.

6.2.2.13 Greening

Issues. 6.3 square metres of green land available per person in Ulaanbaatar, which is 2 to 3 times lower than the average norms. This is a cause of concern in Ger areas where soil erosion has taken place before and after establishing of the settlement. Before the Ger area expansion, the immediate surroundings of Ulaanbaatar experienced enormous loss of forest cover due to deforestation. As Ger areas started to expand, intensive grazing of surrounding grasslands led to the loss of grasslands and remaining vegetation cover on the periphery of the city. Soil erosion intensified with the rapid and sustained expansion of Ger areas on the undulating topography, steep slopes and hills that surround Ulaanbaatar in all directions. Further, Ger area expansion has taken place with almost no land reserved or public and/or green spaces. Unpaved roads and associated soil erosion to due increasing traffic and lack of concerted efforts to increase green spaces and/or greening of Ger areas have added to the problem. The extreme cold climate and low levels of precipitation have not helped the fragile Steppe environment recover from soil erosion and loss of vegetation cover. Moreover, the existence of Ger areas close to the city centre limits the possibility of enhancing green space in the city. The result of all these is increased air pollution due to dust, which get intensified in spring owing to snowmelt and drying up of the soil. The air pollution and living conditions are much poorer in Ger areas as the soil erosion is at its highest there. Therefore, it is important to increase green spaces and undertake "greening" of Ulaanbaatar and its Ger areas.

Recommendations

1. Develop and implement a comprehensive policy on "greening" of Ger areas.
2. Plan Ger area with green spaces and (micro) parks.
3. Support the participation of state agencies, NGOs, community, and international organisations in greening activities.
4. Start undertaking campaigns to call upon Ger area residents to plant trees in the *khashaas* (plots) and award those who excel in such activities.
5. Develop and publish guidelines, manuals and brochures on tree planting and conduct relevant training.
6. Establish plant nurseries in every district, provide with quality plants and support them to create proper conditions for cultivating them.

6.2.3 Urban Poverty, Unemployment and Social Welfare

6.2.3.1 Urban Poverty

Issues. In Ger areas, there are four dimensions of urban poverty and related issues that are summarised below:

1) *Monetary and Capability Poverty*. A large proportion of Ger area residents suffer from monetary (low incomes and lack of savings) and capability (skills and education) poverty:
   a) *Low Incomes*. 45 percent of Ger areas have incomes below poverty line.
   b) *Lack of Savings*. Due to low incomes and high tariff/service charge of access to social and basic urban services, Ger area residents are unable to build savings (see Access Poverty in point 2 below).
   c) *Skills and Education*. Although literacy levels are high in Ger areas, residents with "higher education" and "vocational education" are only 10% and 5% respectively.
2) *Access Poverty* is related to Ger area residents' access to the following:
   a) *Access to Land and Secure Tenure*. Owing to the free high land allowance and ongoing privatisation of land ownership, access to land and secure tenure is not a serious poverty issue in Ger areas. Rather it is the "problem of plenty" (see point 2(c) below).
   b) *Shelter*. More than one-third of Ger area households live in traditional Ger housing with the associated problems of inefficient cooking-and-heating stoves, and increasing air pollution.
   c) *Access to Social and Basic Urban Services, and Infrastructure*. Ger area residents suffer from poor access to social and basic urban services, and infrastructure. They have to (i) rely on kiosk water supply, bath-and-laundry houses, low voltage power supply, and poor education, health and transportation services; and (ii) suffer from lack of streetlights, proper roads, footpaths, footbridges, inadequate drainage and flooding (see details in the previous Section on Infrastructure and Basic Urban Services).
   d) *Ger Area Residents Pay More to Access Basic Urban Services*. Whether it is water supply, bathing services, solid waste collection or electricity, Ger area residents pay more to access these services.
3) *Poverty of Social Inclusion and Networking*. This poverty has two aspects:
   a) *Community Mobilisation and Organisation*. A large percentage of Ger area population, especially the urban poor, is inactive in terms of community mobilisation and organisation. This percentage is still lower for in-migrants, households with fewer members and households not registered with their *Khoroos*[33].
   b) *Social Networking*. Ger area residents, especially the poor, have poorly networked in the society.
4) *Poverty of Empowerment*
   a) *Poverty of Information*. Ger area residents suffer from the poverty of information including lack of access to information on (i) day-to-day decision-making at local government level which affects their daily lives; and (ii) development projects and programmes from which they could benefit.
   b) *Lack of Participation in Decision-making*. Ger area residents lack participation in the (i) budgeting process of local governments, (ii) decision-making related to project planning and design, (iii) project implementation and monitoring, and (iv) post-project operation and maintenance of community assets. As a result, their development concerns remain under-addressed or un-addressed.

[33] MoLSW, UNDP and PTRC, 2004. *Urban Poverty and In-migration: Survey Report*, Ministry of Labour and Social Welfare, United Nations Development Programme and Population Teaching and Research Center, Ulaanbaatar.

Recommendations

1) *Monetary and Capability Poverty*. To address this poverty, focus on:
    a) Improving support to develop skills, including training, apprenticeship and stipends to the urban poor.
    b) Organise saving-and-credit groups to help the Ger area residents develop a habit of saving, starting with small amounts.
    c) Improve the provision of education services in Ger areas.
2) *Access Poverty*
    a) *Land and Secure Tenure*. Address the problem of free high land allowance (see Land Planning, Development and Management Section).
    b) *Shelter*. (i) Develop mortgage finance to access (or build) improved housing; and (ii) Provide support to build improved housing. Both these should be energy efficient new constructions or rehabilitation of existing buildings.
    c) *Access to Social and Basic Urban Services*. Enhance access by improving the provision of social and basic urban services for Ger area residents (see details in Section on Infrastructure and Basic Urban Services).
    d) *Reduce the Service Charge/ Tariff of Basic Urban Services* by (i) providing cross-subsidy to the urban poor, and (ii) densification of Ger areas.
3) *Poverty of Social Inclusion and Networking*. Proactively promote *community mobilisation and organisation* through a systematic process.
4) *Poverty of Empowerment*
    a) *Improve information access/ dissemination* to Ger area residents, especially the poor, on (i) day-to-day decision-making, and (ii) ongoing and planned development programmes and projects. This could be through "community-cum-information centres" at *Khoroo* and/or sub-*Khoroo* level.
    b) *Empower communities* by promoting/ enabling participation of organised communities in (i) the budgeting process at the *Khoroo* and Duureg-levels (participatory budgeting); (ii) project planning and design through "Community Action Planning" (see Urban Governance Section); and (iii) project implementation and monitoring (through mechanisms such as "Community Contracting").

Post-project operation and maintenance of community assets would be ensured if organised communities participate in project planning, design, implementation and monitoring.

6.2.3.2 Employment and Social Welfare

Issues

Of the 121,400 unemployed persons in Ulaanbaatar, 80% are Ger area residents. Graduates from the universities, their parents and family members are unemployed. Most Ger area residents cannot access social welfare services and are vulnerable to poverty. Issues regarding the social welfare and labour services provision in Ger areas are:

1) Except for small service and/or grocery kiosks, schools and clinics, Ger areas lack any other economic opportunities, and therefore there are very few employment options.
2) Due to poor environmental conditions in Ger areas, including soil erosion, trees and vegetables do not grow. Moreover, residents lack any initiative regarding this.
3) Poor electricity and water supply, and heating options limit the development of small and medium enterprises, and form the basis for illegal economic activities
4) People are more interested in getting benefits from aid and grants, and the number of such people is increasing.

5) Youth is interested in easy work/ not hard labour, and child labour has increased

6) Only one social worker works per *Khoroo*, and she/he is unable to access and/or support all *Khoroo* residents. Social workers primarily serve residents who contact them. *Khoroo* offices lack studies on the involvement of residents in labour and social welfare services.

Recommendations

1) Conduct studies on the accessibility of labour and social welfare services for the Ger area residents. This will help to:
   a) Plan initiatives and activities for involving unemployed residents in labour and social welfare services.
   b) Plan the establishment of vocational training centres in Ger areas
   c) Set up commercial spaces to purchase products produced by families
   d) Promote small enterprises in Ger areas and include into plans of related agencies and organizations
2) Support Ger area residents with small loans for running small businesses.
3) Provide labour safety standards for the household manufacturers
4) Establish vocational training centres in Ger areas.
5) Renew the system for vocational training, and build training centres based on market demand.
6) Develop linkages with employment agencies, and considering the changes in social, economic and technological development, address human resource issues accordingly.
7) Labour and social welfare agencies and their social workers should support unemployed residents and provide them with opportunities/ information on opportunities to be employed in public, private and other sectors of the (urban) economy.
8) Improve social welfare access for the residents of remotely located Ger areas.

6.3 Urban Governance

Two areas of urban governance (among others) are of immediate importance with reference to the issues identified and recommendations made in the previous sections and sub-sections. These are:

1) Community involvement in Ger area upgrading
2) Fostering partnerships between local government and the private sector
3) Strengthening municipal finances.

6.3.1 Municipal-Community Partnerships for Ger Area Upgrading

The current situation of community participation in Ger-area upgrading and partnership with local government can be characterised as follows:

1) Community-Based Organisations (CBOs) are either incipient or absent in many of the poorer *Khoroos*.
2) Many Peri-urban Ger areas, populated by recent in-migrants, are socially fragmented and lack the sense of community identity required for collaborative efforts.
3) The low degree of social capital is to some extent compensated by the local network of *Khoroo* governors and *Kheseg* leaders. The *Khoroo* Governors are elected representatives at the *Khoroo* (Sub-District) level, are well known in their community and their authority is generally well respected. The *Kheseg* leaders tend to have very personal contact with the local residents within the *Khesegs*. However, this has not resulted in sufficient empowerment of Ger area communities for

them to influence decision-making at the *Duureg* and/or *Khoroo*-levels (including budgeting) and/or to improve their access to basic urban services and infrastructure.

4) Allocation for investments in basic urban services and infrastructure are sector-driven and follow vertical channels via the line ministries and Mayor's Office.

5) These factors create a "negative cycle" in Ger areas that are most affected by poverty, low revenues and limited human capital, and which lack political leverage and are least able to initiate development activities and/or mobilise external support.

Initial Experience. The initial experience of community involvement in Ger area upgrading and development (for example, UNDP Urban Poverty Pilot Project; ADB/HAAPs and JFPR; World Vision's Area Development Programme) indicate that possibilities exist for building development-orientated partnerships between local government and Ger area communities and their organisations. The experience under ADB/HAAPs for Ger area upgrading in Ulaanbaatar, Darkhan and Erdenet points towards the need for systematic use and application of participatory approaches (such as Community Action Planning) for Ger area upgrading.

Recommendations

The recommendation is that MUB should embark on community-led Ger area upgrading, which is a participatory and systematic approach to Ger area upgrading. It should (i) build on the strengths, knowledge and priorities of local communities, (ii) develop result-orientated partnerships with *Khoroo* and Duureg-level governments, and (iii) address the variety of issues related to Ger area upgrading through:

- Construction of small-scale infrastructure;
- Provision of basic urban services;
- Support for income generation activities, child and maternal health care, general health and hygiene, care for the elderly, land privatisation and registration, etc;
- Support formation of "saving and credit groups"; and
- Support for participation in the democratic process and local decision-making

What is a Community-Led Ger area upgrading?

Community-led Ger area upgrading involves a systematic and step-wise approach that will use the specialised techniques of Social Mobilisation, Community Action Planning and Community Contracting developed by UN-HABITAT. These techniques provide a focused approach with necessary flexibility to address urban upgrading and urban poverty issues.

- *Social Mobilisation*. It is the primary step of community-led urban upgrading. It allows communities (including the urban poor) to think about and understand their situation, and to organise and initiate action for upgrading with their initiative and creativity. Through mobilisation, people can organise themselves to take action by developing their own "Community Action Plans" for development rather than being imposed from outside.
- *Community Action Planning*. In Community Action Planning (CAP) process, people area considered the "primary resource" rather than the objects of development. This approach motivates the urban poor to take lead in the planning and implementation of urban upgrading activities. Urban communities (including the urban poor) are assisted in identifying their needs for basic urban services, infrastructure, and other related needs (such as improvement in livelihoods). CAP process develops the capacity of the communities to take appropriate action for their own development, and helps communities in preparing "Community Action Plans" and with support from the Local Governments and other relevant stakeholders. The "Community Action Plans" are implemented with the resources mobilised from within the community and resources provided by different levels of government. Well-prepared Community Action Plans are also supported by donor agencies. Since communities mobilise their own resources and invest in the implementation of various projects, it helps build ownership of the project outputs and their long-term sustainability through putting in

place mechanisms for their operation and maintenance. Community Action Planning is an Asia-wide tested and successful approach to urban upgrading of low-income settlements, such as the Ger areas in Ulaanbaatar city.

- *Community Contracting*. A Community Contract is a contract awarded to a community-based organisation (CBO) by a government agency and/or a project to carry out physical works that have been identified in the Community Action Plan. Community Contracts have been used by UN-HABITAT for a number of innovative activities beyond simple infrastructure activities. It is important to note that Community Contracts emerge from the process in which communities identify their needs, prioritise their problems and agree upon plans for their solutions.

6.3.2 Fostering Partnerships with Private Sector

Issues. To date, there have been only a few concerted efforts by MUB to involve private sector entities in Ger area redevelopment. Immense potential exists for fostering partnerships between the MUB and the private sector entities for city development including Ger area redevelopment.

Fostering Partnerships with Private Sector. A start has been made in this direction by MUB when it signed a Memorandum of Understanding (MOU) with the Mongolian National Chamber of Commerce and Industry (MNCCI) on 26th December 2005. The MoU was implemented through Order No. 115 of the Governor of the Capital City on 16th March 2006

Recommendations

The following steps needs to be taken to further strengthen the development-orientated partnership between MUB and the private sector represented by MNCCI:

1) Review the activities planned and implemented under the framework of the above MOU since March 2006 to present.
2) Explore the role of private sector in the Redevelopment of Central Ger Areas in general and with special reference to:
   a) Land development;
   b) Construction of housing, based on demand assessment and in line with the Government of Mongolia's Master Plan on Housing (40,000 Houses Programme) which is to be implemented by the Mongolia Housing Finance Corporation; and
   c) Investments in the development, operation and maintenance of urban infrastructure (not only construction) and its expansion into Central Ger Areas for their Redevelopment.

6.3.3 Strengthening Municipal Finances

Issues

The following characterise the context and state of municipal finances in Mongolia that also applies to the Municipality of Ulaanbaatar:

1) The Public Sector Management and Finance Law govern the fiscal system and relations between central and local governments in Mongolia[34]. However, as Central Government is generally responsible for capital investment through its sectoral Ministries, capital investment programmes rarely match with local (urban) needs, and implementation arrangements become even more complicated.

[34] According to Public Sector Management and Finance Law, city governments are fully responsible for district hospitals, maternity clinics and local clinics; district housing services; kindergartens, primary and secondary schools; fire protection; and roads within their jurisdictions; as well as for the operation of electricity, water, police, sewer and drainage, and all social welfare services except social security.

2) With 46% of Ulaanbaatar's 2002 city budget earmarked for employee salaries, wages and benefits, there are clearly major gaps in local government finances with inadequate resources for operations and maintenance that undermine the quality of basic urban service delivery[35].

3) Annual *Duureg* and *Khoroo* budgets are small and largely earmarked for staff salaries; hence, there are few opportunities for developing new initiatives at the local level including those related to Ger area upgrading.

4) Meanwhile opportunities to delegate service delivery to private sector, NGOs or CBOs have not been taken up; despite the advantages this could offer in competitiveness and cost-effectiveness (as discussed in the previous two sub-sections).

Hence, there is an urgent need therefore to improve local government/municipal finances in the cities and towns in Mongolia.

Recommendations

Municipal finances need to be strengthened with relevant legal and regulatory changes, in order for MUB (and such local governments in other parts of Mongolia) to enhance their revenues and in turn invest in infrastructure and basic urban service provision for the urban residents in general and Ger area residents more particularly. In this regard, the following steps should be taken:

1) Municipal Expenditure Review of MUB (the World Bank is conducting this at present).

2) Conduct a review of investments made by MUB in various infrastructure and basic urban services at city-, Duureg- and *Khoroo*-level over a five-year period.

3) Conduct a review of investment plans and budgetary resources available of MUB for the next 2 to 5 years at city-, Duureg- and *Khoroo*-level.

4) Involve Ger area communities in decision-making at Duureg- and *Khoroo*-level including the budgeting process with the help of "participatory budgeting methodology and guidelines".

5) Prepare an Investment Programme for Ger Are Upgrading in view of the Strategy prepared under the GUSIP Project (this will be done under Objective 4 of the GUSIP Project).

[35] World Bank (2005) *Mongolia's Regional Development: World Bank Policy Note*, Processed.

ABBREVIATIONS

GUS	Ger Area Upgrading Strategy of Ulaanbaatar City
GUSIP	Ger Upgrading Strategy and Investment Plan
MNT	Mongolian Tögrög
MUB	Municipality of Ulaanbaatar
UB	Ulaanbaatar
USUG	Ulaanbaatar City Water and Sewerage Company

Aimag	Province (21 aimags exist in Mongolia, plus Ulaanbaatar City)
Duureg	District: an administrative division of a city, the urban equivalent of a sum
Ger	Traditional Mongolian tent like dwelling
Ger areas	Informal settlements named after Ger - the traditional home of Mongolian nomads.
Khashaas	2-metre high wooden fencing of Ger plots, as well as fenced plots.
Kheseg	Neighbourhood community
Khoroo	Sub-District

Monetary Unit: Mongolian Tögrög (MNT)

1USD = 1380 (May 2010)

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