ULAANBAATAR 2020 MASTER PLAN AND DEVELOPMENT APPROACHES FOR 2030

TECHNICAL SUMMARY
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1. INTRODUCTION

Preface
The goal of strategic urban planning in Ulaanbaatar is to provide livable environments for all Ulaanbaatar citizens using informed and evidence based policies and actions. The City also aims to provide infrastructure that is sustainable and environmentally friendly. The Master Plan is the primary document that sets out the design and spatial strategies for the long-term development of the city. The key objectives of the Master Plan will be implemented through district and regional master plans, neighborhood and building infrastructure plans and other projects and programs. Historically, Ulaanbaatar has had five master plans since 1954 and the 6th master plan titled “Ulaanbaatar 2020 Master Plan, Development Approaches for 2030” was approved for implementation by the State Great Khural in 2013. Public participation is critical for the sustainable implementation of the new Master Plan.

Roles and responsibilities of the City of Ulaanbaatar
Mongolia’s constitution emphasizes the multifunctional roles and responsibilities of Ulaanbaatar. The primary objective of the Master Plan is to implement the City’s constitutional responsibilities by providing livable environments and improving the quality of life.

Figure 1. Roles and responsibilities

**CAPITAL OF MONGOLIA**

Ulaanbaatar is the center of national security and implementation of strategic policies. It also serves as the center of government and socio-economic policy.

**CENTER OF CAPITAL REGION**

Ulaanbaatar is the manufacturing, business, science and technology, education, health, art and cultural center of the region and Mongolia.

**INDEPENDENT ADMINISTRATIVE UNIT/CITY**

Ulaanbaatar is a metropolitan city that has its own territory, governance and culture.
Development challenges in Ulaanbaatar

The Ulaanbaatar 2020 Master Plan was approved by the State Great Khural (resolution 28) in 2002 and implemented for over 10 years. However many challenges were faced during the implementation of the plan.

In 2012, the Ulaanbaatar Capital Region population reached 1.227 million people including Ulaanbaatar City, which reached metropolitan city status with 1.163 million residents. In the last 10 years, the Ulaanbaatar Capital Region population increased by 558,200 people (56% migration growth and 44% natural growth), and the Ulaanbaatar City population increased by 437,000 people. This growth rate was 5.7 times greater than Darkhan and 5.1 times greater than Erdenet. Thus, the lack of comprehensive demographic and economic strategies to address Ulaanbaatar’s unplanned increasing population was the most critical issue in the implementation of the 2020 Master Plan. (See Figure 2. Ulaanbaatar’s current development challenges)

Figure 2. Ulaanbaatar’s current development challenges
During the implementation of the 2020 Master Plan, the legal environment did not facilitate a democratic city planning process and system to implement the 2020 Master Plan. Several additional factors also contributed Ulaanbaatar’s inconsistent urban planning strategy, including insufficient financial investment to implement the plan, and regional and city decision making that was inconsistent with the 2020 Master Plan.

**Legal basis of the Master Plan**

To tackle the City’s challenges, it was deemed necessary to expand and implement the “Ulaanbaatar 2020 Master Plan”. “The Ulaanbaatar 2020 Master Plan and Development Approaches for 2030” was approved by the State Great Khural with Resolution 23 on February 8, 2013. The Master Plan was written by the Urban Planning and Design Institute and relevant government agencies also contributed. This effort was undertaken in accordance with:

(i) Resolution 13 of the Government of Mongolia on January 13, 2010 to elaborate “Ulaanbaatar 2020 Master Plan,” and

(ii) Joint Decree 121 by the Minister of Road, Transportation, Construction and Urban Development and the Ulaanbaatar City Governor and Mayor on August 19, 2010 to prepare the scope and design framework of the 2030 Master Plan.
MONGOLIAN STATE GREAT KHURAL RESOLUTION
OFFICIAL DOCUMENT APPROVAL FOR
ULAANBAATAR 2020 MASTER PLAN AND
DEVELOPMENT APPROACH FOR 2030
(Unofficial Translation)

To be approved by State Great Khural based on clause 5.1.5 of section 5 of the
Law on Urban Development:

1. According to the official document approval for Ulaanbaatar 2020 Master
Plan and Development Approaches for 2030, the document is approved with
related appendices.

2. According to the official document approval for Ulaanbaatar 2020 Master
Plan and Development Approaches for 2030, the following actions are to be
implemented by the Government of Mongolia (obliged to N. Altankhuyag):

   • Development Approaches implementation plan for Ulaanbaatar 2020
     Master Plan and Development Approaches for 2030 is to be implemented
     in first half of the second quarter, 2013 and the sector development
     project is to be implemented in 2013.

   • Proposed legislation on Ulaanbaatar City’s regional development is to be
     presented in the regular 2013 autumn session of the State Great Khural.

   • To maintain regional sustainable development through decentralization
     of the Ulaanbaatar population, the vision and policy to develop aimag,
     soum and villages is to be presented in the regular autumn session of the
     State Great Khural.

   • In the framework of Ulaanbaatar 2020 Master plan and Development
     approach for 2030, financial resource for the official document
     implementation, which is 25.5 trillion tugrig, is to be included in the
     annual state budget, economic policy and public development policy and
     in order to maintain the rest of the financial resource, to make amendment
     in the relevant legislation and to complete the process in the regular 2013
     spring session.

   • Ulaanbaatar 2020 Master Plan and Development Approaches for 2030
     official document shall be maintained for the implementation and
     achievement is to be presented once in 2 years in State Great Khural.

3. The monitoring of implementation is to be conducted by the Economic
   Standing Committee (B.Garamgaibaatar)

State Great Khural Chairman        Z. Enkhbold
Urban Planning Principles for the City of Ulaanbaatar

Vision
Ulaanbaatar will be the CAPITAL CITY of Mongolia that respects the NOMADIC HERITAGE which has endured many centuries, values its PEOPLE, embraces its GEOGRAPHICAL CHARACTERISTICS, is ENVIRONMENTALLY FRIENDLY, has industries and an economy that are GLOBALLY COMPETITIVE and TECHNOLOGICALLY ADVANCED, and is A SMART CITY with a unique Mongolian character.

Ulaanbaatar has drawn on the best international long-term planning approaches to define its own priorities for development to 2030.

Figure 3. Development approaches
Consistent with Mongolia’s regional development strategies, Ulaanbaatar will be developed as an independent region consisting of Ulaanbaatar City, 3 satellite cities (Baganuur, Bagakhangai, and Nalaikh) and small towns close to the city.

The Master Plan implements sustainable development planning principles with a specific focus on matters of national security, livability, water resources and ecological sustainability. The key strategy of the Master Plan 2030 is to develop new cities and villages to appropriately decentralize the population to those areas.

### Regional demography of Ulaanbaatar

A strategic policy is to develop regions sustainably and to support viable economic sectors. In 2030, Ulaanbaatar region is projected to be not greater than 50.3% of the Mongolian population. In 2010, the population of the satellite cities and villages was 8.9% of the total Ulaanbaatar Capital Region population and it is projected to increase to be 20.6% (or 3.5 times more) by 2030. In 2010, Ulaanbaatar City had 91% of the total region population and it is projected to decrease to 79.4% by 2030.

### Table 1. Ulaanbaatar Capital Region projected population

<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>2020</th>
<th>Growth %</th>
<th>2030</th>
<th>Growth %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulaanbaatar City</td>
<td>1,058.100</td>
<td>1,235.500</td>
<td>116.8</td>
<td>1,400.000</td>
<td>132.3</td>
</tr>
<tr>
<td>Other towns and</td>
<td>103.700</td>
<td>298.500</td>
<td>288.0</td>
<td>363.000</td>
<td>350.2</td>
</tr>
<tr>
<td>satellite cities</td>
<td>1,161.800</td>
<td></td>
<td></td>
<td>1,763.000</td>
<td>151.8</td>
</tr>
<tr>
<td>Ulaanbaatar Capital</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Region (Total)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The Ulaanbaatar Capital Region includes the population of Ulaanbaatar City and the Capital Region.
Development of satellite cities

Extensive investment in the development of manufacturing, industry and public services in the satellite cities will be undertaken to support the strategy to decentralize the Capital Region population. An investment framework for essential infrastructure will be facilitated and implemented.

**Nalaikh City** will be a center of transportation, logistics and manufacturing covering 4,194.0 hectares of land with 65,000 citizens and will have a high-tech Localization Park and centralized public services.

**Baganuur City** will be a strategic center of mining, energy, chemical technology and construction materials manufacturing covering 5,982.0 hectares of land with over 60,000 citizens.

**Bagakhangai Town** will be a center of warehouses, logistics, wholesale food processing and construction manufacturing and this town will be an enterprise tax-free zone.

**New cities**

**New airport city (Aerocity):** A new city is planned to be adjacent to the new airport in Khushig Valley, Sergelen sum, Tuv aimag on 1695 hectares area with 51,5000 citizens. The city will be a center of airport related services, repair centers, information technology, business and trade as well as a logistics interchange center.

**Emeelt – Argalant:** A new city is planned to be built for light industry, livestock raw material manufacturing, logistics and warehouse covering 3081 hectares area with 14,000 citizens and all livestock processing plants in Ulaanbaatar city area will relocate to Emeelt-Argalant.
Other towns

The following towns will be satellite towns of Ulaanbaatar City:

**Gachuurt town** will be a center for tourism, camping and residential development covering 1164 hectares of land with 7,000 citizens.

**Olziit Village** will be a center for horticulture and light industry covering 923.1 hectares with 5,000 citizens.

**Tuul Village** will be a center for agricultural manufacturing and tourism covering 2812.3 hectares with 10,000 citizens.

**Bio-Songino** will be a center for veterinary medicine, pharmaceutical manufacturing, nano and biotechnology, food processing and medical tourism covering 974.4 hectares with over 7,600 citizens.

**Partizan – Jargalant** area will include Jargalant, road crossing 361 and Rashaant 0442 village areas and will be a center for agriculture and will cover 3,173 hectares with 13,500 citizens.

Transportation and logistics

A new rail line is planned to be built to the south of Bogd Khan Mountain to transport export goods efficiently and to decrease congestion in Ulaanbaatar. The rail line will connect Mandal Station with Bagakhangai Station through Zuunmod. The 170km railway (see Figure 4) will be critical to increasing business and trade between China, Russia and the European Union. This will also reduce the movement of goods through Ulaanbaatar to allow for the further expansion of passenger transport services within the City. Regional roads connecting satellite cities and towns with Ulaanbaatar City and the Asian Highway 3 (AH-3) will join with the main road at the new airport.
The road that connects Nalaikh and Ulaanbaatar will be expanded and improved. A new highway through Ulaanbaatar City to Nalaikh City will be constructed parallel to the existing road. Four national and regional logistics centers will be built in satellite towns and settlement areas along the railways around Ulaanbaatar. They will be built towards the west (Emeelt-Argalant), east (near Nalaikh), southwest (Bagakhangai) and the south (Aerocity) to increase the capacity of Ulaanbaatar’s transport system and improve the environment and regional ecology. A small-scale air cargo center will be built in Aerocity, and storage facilities for explosives and hazardous chemicals as well as terminals will be built in Bagakhangai. International standard terminals and logistics centers will be built in Tolgoit to replace the existing limited terminals and infrastructure in Ulaanbaatar.
Ulaanbaatar Green Belt

To address issues of increasing population and continued migration to Ulaanbaatar, a green belt is proposed to extend 35,000 hectares around Ulaanbaatar. The green belt will include a number of low density uses which will limit further urbanization (see Figure 5). The management of the green belt will be governed by dedicated administration, legislation and regulations. The benefits of the green belt will include limiting unregulated urban expansion, maintaining the city’s ecological sustainability and the development of new recreation areas.

Figure 5. Ulaanbaatar’s Green Belt
From a monocentric city to a multi-centric, modern city

Currently, Ulaanbaatar has a single city business center with activities and services largely found in one centralized area. Most of the municipal government agencies and many international and national organizations, businesses, trade and services organizations, cultural institutions and higher education institutions are located within the city center. The capital city’s current structure cannot accommodate the increasing range and scale of development and the development of a multi-centric modern city is proposed. Ulaanbaatar City will be divided into eight administrative units which will each have activity centers with government administration, businesses, services, and infrastructure (see Figure 6).

Figure 6. Administrative units, centers and sub-centers

The administrative units will be further divided into 47 local planning units, which will include a range of land uses including residential, public, industrial and redeveloped ger areas.

A four level hierarchy is planned within Ulaanbaatar: city centers, sub-city centers, district centers, and community centers.

1. **City centers:** The current city center and New Yarmag city center will be the City’s primary central business districts (CBD) that will include national government agencies, international organizations, public organizations, as well as service industry and businesses.
2. **Sub-city centers:** New City, Sonsgolon, Gurvaljin, Bayankhoshuu, Selbe, Amgalan are the six new proposed district level centers (city sub-centers). These centers will encompass district level government services and retail centers, as well as apartment complexes.

3. **District centers:** Each khoroo (neighborhood) will be divided into a planning unit and will have a public center that consists of neighborhood administration buildings, public event venues, small retail centers, banks, hospitals and schools.

4. **Community centers:** These local community centers will provide everyday services such as grocery stores, cultural and social activities all within a short walking distance of residential areas.
Over the past two decades, the legal environment and planning system has allowed unplanned and sprawling land use changes and development which has distorted the city’s urban planning policies. In market economies, land use zoning is used to monitor and control land use, construction, and urbanization activities to ensure they are in accordance with urban planning policies. The Master Plan 2030 implements the zoning requirements of the Mongolian Law on Urban Development by introducing a system of 7 zones and 20 sub-zones within Ulaanbaatar City to manage and control permitted land use activities within specific areas of the city. The new zoning system is a key strategy of the Master Plan 2030 which is a new approach to urban planning in Ulaanbaatar.

Figure 7. Ulaanbaatar land use zoning
Ulaanbaatar’s detailed zoning plans and regulations will be prepared in accordance with the Master Plan 2030 and the implementation of the regulations will allow for orderly land use and construction to be approved. The following development matters will be addressed through the zoning plans and regulations:

- Permitted or prohibited land use types and forms
- Development intensity and density
- Height, space (size), and location of buildings
- Vehicle parking provision and design
- Other specific use and development issues, as required.

Table 2. Ulaanbaatar land use zoning

<table>
<thead>
<tr>
<th>№</th>
<th>Mongolian Law on Urban Development</th>
<th>Zones</th>
<th>Sub-zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Residential</td>
<td>Residential</td>
<td>Private houses with backyards (Single dwelling residential zone)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Low rise apartments zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mid rise apartments zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>High rise apartment zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Commercial</td>
<td>Ger areas zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Public commercial zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Public sub-commercial zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Neighborhood commercial zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Commercial service zone</td>
</tr>
<tr>
<td>2</td>
<td>Industrial</td>
<td>Industrial</td>
<td>Light industrial zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Special industrial zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transport and wholesale center zone</td>
</tr>
<tr>
<td>3</td>
<td>Green open space, tourism</td>
<td>Open space</td>
<td>Parks, gardens, open green space zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Open space</td>
</tr>
<tr>
<td>4</td>
<td>Mixed Zone</td>
<td>Mixed use</td>
<td>Residential and commercial mixed zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Manufacturing and trade (sales) mixed zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Trade, industrial, and public mixed zone</td>
</tr>
<tr>
<td>5</td>
<td>Engineering infrastructure and road network</td>
<td>Engineering infrastructure</td>
<td>Engineering linear infrastructure zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Engineering facilities zone</td>
</tr>
<tr>
<td>6</td>
<td>Special purpose</td>
<td>Special purpose</td>
<td>Special purpose zone</td>
</tr>
<tr>
<td>7</td>
<td>Camp ground</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Agriculture and husbandry</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
In 2010, 40% of all households in Ulaanbaatar lived in apartment buildings with utilities while another 60% of all households lived in ger areas with limited public utilities. Ger areas, where there is insufficient engineering infrastructure, comprises 30% of the city's built environment and 55% of the residential area. The number of apartment complexes buildings with public utilities will be increased and the number of ger areas with limited public utilities will be reduced through the implementation of the Master Plan 2030.

**Apartment buildings with public utilities**
The Municipality of Ulaanbaatar is planning to increase the proportion of apartments with public utilities to be 79% of the entire city's housing stock and increase the average apartment floor area to be 13.5 m² per person by 2030.

**Table 3. Housing stock projections**

<table>
<thead>
<tr>
<th>Year</th>
<th>2011-2016</th>
<th>2017-2020</th>
<th>2021-2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing provider</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private companies</td>
<td>67900</td>
<td>31700</td>
<td>52480</td>
</tr>
<tr>
<td>Annual /ave./</td>
<td>11317</td>
<td>7925</td>
<td>5248</td>
</tr>
<tr>
<td>Owner-occupier</td>
<td>2500</td>
<td>7700</td>
<td>55000</td>
</tr>
<tr>
<td>Annual /ave./</td>
<td>417</td>
<td>1925</td>
<td>13750</td>
</tr>
<tr>
<td>Government</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rent</td>
<td>1000</td>
<td>2000</td>
<td>5000</td>
</tr>
<tr>
<td>Affordable housing</td>
<td>2500</td>
<td>9500</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>71,400</td>
<td>43,900</td>
<td>121,980</td>
</tr>
<tr>
<td>Annual /ave./</td>
<td>11900</td>
<td>10975</td>
<td>12198</td>
</tr>
</tbody>
</table>

**Private (single-dwelling) housing**
In 2010, private dwellings with public utilities comprised only 0.3% of the total housing stock in Ulaanbaatar. This type of housing will increase up to 16.7% by 2030. The private housing districts are generally located further from the
central public utilities networks, have independent utilities supplies, and are low-rise buildings. Part of the existing ger district will be replanned as low density private housing, as shown in the middle redevelopment area in Figure 6. Private housing districts will be on privately or publicly owned land with single dwellings. The development of these districts will include the establishment of attractive landscaped areas, service centers, paved roads and streets.

Table 4. Housing stock and utilities provision

<table>
<thead>
<tr>
<th>Housing type</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Household</td>
<td>Percentage</td>
<td>Household</td>
</tr>
<tr>
<td>Housing with full utility services</td>
<td>Apartments</td>
<td>115196</td>
<td>43.0%</td>
</tr>
<tr>
<td></td>
<td>Houses</td>
<td>871</td>
<td>0.3%</td>
</tr>
<tr>
<td>Housing with partial utility services</td>
<td>Houses</td>
<td>87566</td>
<td>32.0%</td>
</tr>
<tr>
<td></td>
<td>Gers</td>
<td>65358</td>
<td>24.7%</td>
</tr>
</tbody>
</table>

**Apartments (multi-unit housing)**

Nisekh-Yarmag and Bayangolyn Am are identified as the locations for new public apartment areas and a small center is planned including services, retail centers, social infrastructure, and vehicle parking. The central ger areas and old buildings from 1950-60s in central Ulaanbaatar, which have been deemed uninhabitable, will also be redeveloped as apartment areas. Ulaanbaatar’s apartment units with public utilities as a proportion of all housing stock will increase from 43.6% in 2010 to 61.8% in 2030 (Table 4).
Redevelopment of the ger areas

The ger areas are divided into inner, middle, and fringe areas for redevelopment. Each of the areas is defined by their location, proposed infrastructure provision and type of proposed residential redevelopment. The redevelopment of the ger districts is proposed as follows:

1. The inner ger redevelopment areas will be connected to central public utility infrastructure and redeveloped as medium and high density apartment complexes.

2. The middle ger redevelopment areas will be redeveloped as medium or low density residential areas with utilities partially supplied from the central system or through an independent utility infrastructure.

3. The fringe ger areas will be developed as a low density private housing district with independent utility infrastructure.

The public will participate in the redevelopment of all ger redevelopment areas.

Figure 8. Redevelopment types in inner, middle and fringe areas
Strategy for redevelopment of ger areas

The redevelopment of the ger areas will take a partnership approach between the government, private developers and citizens, to do the following:

- Implement urbanization, proper land use, and re-planning activities with direct participation of land owners.

- Develop sub and micro centers in the ger areas.

- Eliminate environmental pollution and its impacts by implementing waste minimization technology.

- Support opportunities for family businesses and entrepreneurship.

- New residential areas will be suitable for Mongolian culture and traditions and include a range of affordable apartment types that meet high quality living standards.

Figure 9. Ger areas redevelopment
In 2010, 35.3% of Mongolian secondary school students, 27.7% of Mongolian schools, and 40.9% of Mongolian children in kindergarten, 31.4% of the Mongolian kindergartens were in Ulaanbaatar. Also, 69.8% of all Mongolian pre-school children live in Ulaanbaatar city. Schools in Ulaanbaatar are overcrowded and oversubscribed because 70% of all schools and kindergartens are located in Sukhbaatar, Bayangol, and Bayanzurkh districts.

The required capacity of Ulaanbaatar’s schools, kindergartens and hospitals have been calculated in accordance with the Construction Standard and Procedure of Mongolia (BNbD30-01-04), taking the City’s demographics and projected population growth into account. For example, by 2030 there is planned to be 344,612 places for secondary school students in Ulaanbaatar Capital Region (Table 5). Construction of education, health and cultural public services in accordance with the Master Plan, will require investment of 510 billion tugrugs for the Ulaanbaatar Capital Region and 443 billion tugrugs for Ulaanbaatar City.

Table 5. Planned city schools, hospitals and kindergartens

<table>
<thead>
<tr>
<th>Measuring units</th>
<th>2010 Capacity</th>
<th>2020 Planned</th>
<th>2030 Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>Seats</td>
<td>179,693</td>
<td>306,811</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>Children</td>
<td>46,552</td>
<td>153,405</td>
</tr>
<tr>
<td>Hospitals</td>
<td>Bed</td>
<td>1,776</td>
<td>13,806</td>
</tr>
</tbody>
</table>

Table 6. Planned recreational and cultural buildings

<table>
<thead>
<tr>
<th>Measuring units</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cinema</td>
<td>Seats</td>
<td>8,955</td>
</tr>
<tr>
<td>Museums</td>
<td>Area (m²)</td>
<td>8,955</td>
</tr>
<tr>
<td>Cultural palace</td>
<td>Seats</td>
<td>17,910</td>
</tr>
<tr>
<td>Sports complexes</td>
<td>Area (m²)</td>
<td>23,880</td>
</tr>
</tbody>
</table>
The total length of the Ulaanbaatar City road network is 629.9 km, of which 132.3 km are major roads, 139.8 km are connector roads, and 357.8 km are rural roads. Over the past 10 years, the number of vehicles in the City has increased 1.7 times. Approximately, 214,000 vehicles are on the road daily and the average commuting speed has decreased to 20-30 km/h along the major roads. Commuting journeys to and from work within Ulaanbaatar has reached 3.4 million trips per day, with 30.6% of total commuters walking, 24.2% driving, 9.2% taking a taxi, 33.4% riding public transport, and 2.6% using other modes of transport. Ulaanbaatar should promote and improve public transport services to increase the proportion of public transport ridership.

**Road network improvements and extensions**

New city centers and sub-centers are planned to reduce traffic congestion and redistribute traffic volumes throughout the city. The centers and sub-centers will be connected through a network of 9 vertical corridors, 6 horizontal corridors and 4 ring roads. By 2030, the total length of road infrastructure will reach 3,000 kilometers, including a new 60-km expressway.

**Figure 10. Road network**
Road intersections
New tunnel overpasses, bridges and junctions at expressways and major roads will be built based on detailed studies to increase traffic capacity at intersections. Tunnels will also be built at intersections between major roads and the railway line.

Mass transit
An efficient public transport system will be developed by constructing a Bus Rapid Transit system including the refurbishment of existing buses and the addition of new routes. Improvements will be made to the transport network including introducing modern innovations and technology. Light rail transit will operate on existing railways in Ulaanbaatar City and connect satellite towns. In the long term, this route will be upgraded to a LRT Metro system.
Engineering infrastructure is critical for the provision of urban services in Ulaanbaatar. However, existing electricity, heating and water infrastructure cannot meet the city’s increasing service demand. Therefore technology upgrades and development of new infrastructure are required. Existing heating, potable water and waste water pipeline infrastructure have already been in service for more than 50 years and require upgrading. Further, the provision of public urban services needs to be increased to service proposed new construction, ger areas redevelopment and increased population projections. The Master Plan 2030 proposes the following projects to improve and up-date the City’s infrastructure.

**Heating Supply**

New heating supply infrastructure will be constructed, including a new thermal power plant (TPP No. 5) with a capacity of 1,101 kcal/h and a new heat-only plant (US-15) with a capacity of 400 kcal/h, and also smaller thermal power sources with a capacity of 1.7 and 99 kcal/h in 29 locations. Ulaanbaatar’s heating supply is divided into 4 different supply zones, each with a different heating supply source which has been planned as follows (Figure 11):

- **Supply area 1:** 68.7% of the total population in Ulaanbaatar City (246,000 households) will be connected to central heating by 2030. District heating (centralized) heating will be provided by TPP-2, TPP-3, TPP-4, TPP-5, US-15 and TP-5 power plants.
- **Supply area 2:** 43,200 households will be provided with heat-only boiler stations (HOBS).
- **Supply area 3:** 61,100 households will be provided by HOBS and household independent supply.
- **Supply area 4:** 38,600 households will be provided with district heating and HOBS.
Figure 11. Heating supply

Water Supply

Strategies for water resources and water supply are critical to the sustainable development of Ulaanbaatar. The expansion and development of Ulaanbaatar is directly dependent on its ability to provide a continuous water supply to residents and industry. By 2030, Ulaanbaatar’s water usage will double compared to current use and reach 614,300m³/day (Figure 12).

Table 7. Ulaanbaatar projected daily water use

<table>
<thead>
<tr>
<th>User</th>
<th>2010 (m³/day)</th>
<th>2020 (m³/day)</th>
<th>2030 (m³/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartment residents</td>
<td>110991.1</td>
<td>182868.4</td>
<td>275618.2</td>
</tr>
<tr>
<td>Ger district residents</td>
<td>17036.3</td>
<td>14102.0</td>
<td>8544.3</td>
</tr>
<tr>
<td>Total population</td>
<td>128027.4</td>
<td>196970.4</td>
<td>284162.5</td>
</tr>
<tr>
<td>Nonfood sector water usage</td>
<td>168600</td>
<td>261000</td>
<td>321700</td>
</tr>
<tr>
<td>Food sector water usage</td>
<td>6320</td>
<td>7370</td>
<td>8520</td>
</tr>
<tr>
<td>Total</td>
<td>302947.4</td>
<td>465340.4</td>
<td>614382.5</td>
</tr>
</tbody>
</table>
The City’s water supply will be provided from following sources:

1. The upper and central groundwater supply will be used to supply the demand for domestic and potable water use. By 2030, 31% (191,400 m³/day) of total water used will be supplied from the upper and central groundwater resources.

2. Reservoirs along the Tuul, Selbe, and Uliastai rivers are planned. The reservoirs will help regulate the water flow and the surface water will be filtered so it can be used for drinking as well as irrigation. By 2030, surface water is estimated to provide 24% (144,500 m³/day) of the city’s total water supply.

3. Greywater will be treated at wastewater treatment plants using advanced nano- and bio-technology and provide 45% (278,000 m³/day) of the city’s total water supply.

Figure 12. Water supply
Some existing groundwater resources such as the Meat Combinat and Uildver areas will no longer be used. The new Nisekh and Yarmag groundwater reservoirs with the capacity of 46,000 m$^3$/day will be used. A new “Tuul water complex” will be built by the Tuul River basin and will have 258.6 million m$^3$/day capacity.

**Wastewater**

In order to create a healthy and safe environment in Ulaanbaatar, technological upgrades to wastewater the sewerage system are planned. The planned upgrades are:

- Ulaanbaatar’s total wastewater treatment capacity will be increased up to 266,721 m$^3$/day.
- New bio-and nano-advanced technology will be introduced in the central wastewater treatment plant and the plant capacity will be doubled.
- A new wastewater treatment plant will be built in Yarmag (with the capacity of 82,512 m$^3$/day) and another one in the new city center as well.
- New Tuul-1 and Tolgoit-1 central collectors and a 7.8-km sewer pipeline in the Nisekh-Yarmag area will be built.

The city has identified different approaches to managing wastewater treatment in the following service areas:

**Supply area I:** The central wastewater system will be expanded as part of the ger area redevelopment.

**Supply area II:** The inner ger areas will be connected to the central wastewater system.

**Supply area III:** Individual sanitation systems for the fringe ger areas and new town communities will be promoted due to the high cost and difficulty to connect to the central system.

**Supply area IV:** Individual sanitation systems will be installed in areas not serviced by the central wastewater system to avoid soil pollution.

**Supply area V:** Independent sanitation systems will be promoted to the 27 summer camp areas located in Chingeltei and Sukhbaatar districts.
Electricity

Ulaanbaatar’s central electricity network is supplied by Thermal Power Plant (TPP) 2, TPP 3 and TPP 4 and 14 110-kW substations. By 2020, Ulaanbaatar’s electricity supply capacity will be increased to 652 MW and the city’s consumption will increase to 3,932 million kWh. This increased supply will be provided by the proposed TPP 5 which will have a capacity of 820 MW and a windfarm on Salkhit Mountain in Sergelen soum, Tov province. By 2030, the electricity load of the city is expected to reach 1,064 MW, and its consumption 5,886 million kWh, which will be supplied from the existing central electricity system, TPP-4 and TPP-5 (1,850 MW capacity), UB-Hydroelectric Station (100 MW) and also the Salkhit windfarm (50 MW).
Table 8. Electricity use

<table>
<thead>
<tr>
<th></th>
<th>2010 Supply, thousand kW</th>
<th>2020 Demand, million kWh</th>
<th>2030 Supply, thousand kW</th>
<th>Demand, million kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulaanbaatar</td>
<td>246</td>
<td>1408</td>
<td>652</td>
<td>3932</td>
</tr>
<tr>
<td>Surrounding settlements</td>
<td>36</td>
<td>203</td>
<td>189</td>
<td>568</td>
</tr>
<tr>
<td>Total</td>
<td>282</td>
<td>1611</td>
<td>841</td>
<td>5679</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2010 Supply, thousand kW</th>
<th>2020 Demand, million kWh</th>
<th>2030 Supply, thousand kW</th>
<th>Demand, million kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulaanbaatar</td>
<td>1064</td>
<td>5886</td>
<td>1064</td>
<td>5886</td>
</tr>
<tr>
<td>Surrounding settlements</td>
<td>280</td>
<td>963</td>
<td>280</td>
<td>963</td>
</tr>
<tr>
<td>Total</td>
<td>1344</td>
<td>6849</td>
<td>1344</td>
<td>6849</td>
</tr>
</tbody>
</table>

The use of electricity used sourced from renewable sources is proposed to be increased in Ulaanbaatar and the satellite cities. By 2020, the 20-25% of electricity supplied to residential areas and social facilities, including the ger areas and street lighting, will be from renewable energy sources.

**Communication network**

Telecommunication, internet and cable television services will be offered as a “triple service” using WDM-PON and GPON technologies. Businesses and residents will be connected to the internet through fiber optic cable using MSAN technology. Wireless technology will be used where necessary. The following projects are planned by 2030 and will be supported by strategic policies:

**Project 1:** Construction of 80km of new channels to connect 12 different locations.

**Project 2:** Creation of a circular fiber optic cable network including the installation of 250km of high-bandwidth, high-speed fiber optic cables.

**Project 3:** Replace copper cable “switch boxes” at current Automatic Telephone Stations (ATS) with fiber optic cables.

**Project 4:** Relocate the city’s existing television antenna tower and construct 2 new television antenna towers on the east and west of Ulaanbaatar.

**Project 5:** Install a modern switch room for all buildings and apartments to be regulated in accordance with construction architecture and communications laws.

**Project 6:** Build sub-networks along the main network to expand the coverage.
Figure 14. Communications network
Ulaanbaatar’s policies and laws will include principles to develop the city as an ‘eco-city’ that provides residents with a healthy, safe, and comfortable place to live. The following projects will be undertaken to develop Ulaanbaatar as an eco-city:

- Ensure effective use of water resources by amending laws governing the water sector to address integrated river catchment management and pollution control, and implement a water resource management strategic plan.
- Create ecological corridors as a protected habitat for plants and animals. The ecological corridors will provide seven habitat connections between Bogd Khan Mountain and the Khentii mountain range.
- Prohibit the exploration and mining of minerals in urban areas and rehabilitate degraded environments.
- Require industries to treat and purify polluted industrial water and introduce requirements for industry to pay contamination fees.
- Create a new waste management system by introducing bio-degradable cleaning technology.

**River restoration and planning**

The Tuul, Selbe and Uliastai rivers that flow through the city will be restored. The restoration will include the construction of pedestrian and bicycle paths, public recreational areas and green areas along the river banks. A waterpark along the Tuul River will also be developed.

**Gardens and landscaping**

A network of green areas will be created around rivers that flow through Ulaanbaatar, including the Tuul River and other small tributaries such as Selbe and Uliastai rivers.
Street landscaping

The proposed street landscaping will be between 3 and 6 meters wide depending on the location. Streets will be planted with street tree seedlings along every street in unique landscape and architectural designs. By 2030 there are proposed to be 130.6 hectares of landscaped areas along the main streets.

Parks and garden areas

Across the city, 27 parks will be built or renovated a total of 1,541.48 hectares. A 321.46 hectare national park will be built and a new recreational park in the western part of the city will be built totaling 315.0 hectares. Ten existing gardens and parks will be renovated. The city plans to increase the green area per capita to 30.3m², a total of 4,236.1 hectares, which is equivalent to 12% of the city area (Figure 15).
Figure 15. City parks and green areas

Waste management

Integrated solid waste management will be implemented in order to ensure sustainable development, minimize environmental impacts, and appropriate use of recyclable materials, as well as to eliminate public and environmental health hazards. The processes involved in integrated management methods include recycling, reprocessing, transportation, efficient disposal, appropriate disposal of safe hazardous waste, and regulated reuse and recycling of appropriately reprocessed hazardous waste under the professional guidance.
Local collection areas: Local collection areas will be built in the khoroo to collect, sort and compact waste in accordance with a schedule and send to sub-center recycling centers.

Recycling centers of city sub-centers: Collected waste from the local collection areas will be brought here and prepared for central waste processing. These centers will have small scale waste processing capacity.

Central waste processing facility: A center located at Naran will process waste at high-temperatures to extract bio-gas and fertilizer. The facility will be compliance with international standards for smoke free, odorless and environment friendly waste disposal practices.
10. TOURISM AND RECREATIONAL FACILITIES

The Master Plan sets out a goal to develop the Mongolian tourism industry by increasing awareness of Mongolian arts, culture and sports. It also proposes to introduce international standards for the management of tourist areas and supporting Mongolia’s culture and traditions. To achieve this goal, 11 unique facilities are planned to promote Mongolia’s national identity and monuments, and restore Mongolian culture, heritage and traditions. New tourism facilities, infrastructure and supporting services will be established, including: “Turiin Ikh Gurvan Erkhem”, “Tumnii Bakharhalt Gurvan Erkhem”, “Tuukhen Batlamjit Gurvan Erkhem”, the “Soyombo Complex” museum of Mongolian capitals on the Tasgany Ovoo, “8-tan-horses of Chingis Khaan” exhibition complex and facilities, “Museum of Mongolian Great Kings”, “Tuuliin Shugui” complex for tourism, recreational facilities, watersports, culture, and history, Dinosaur Museum, “Tuul River Port” recreational complex, “Mongolian Naadam Complex” in Hui Doloo Hudag, and “Urt tsagaan” tourist information center.

Figure 17. Soyombo Complex, Museum of Mongolian Capitals

The development of the tourism facilities will achieve the goal of developing the city as a foreign and domestic tourist destination. A high standard tourism and hospitality sector will be developed. Improved facilities for national arts and culture, customs, sports and recreation will support and contribute to the City’s economy.
Climate change is causing Ulaanbaatar’s rainfall patterns to change, including increasing the volume and frequency of rainfall events and increasing flash flooding and other extreme weather events. In addition, Ulaanbaatar’s built up areas are continuing to expand, causing issues due to more impermeable surfaces and development in flood-prone areas. Future climate change and extreme weather hazards in Ulaanbaatar will be addressed by constructing engineering flood protection measures and strengthening the City’s ability to adapt to climate change. Engineering flood protection measures will include managing infrequent spring floods, draining rainwater from roads and squares, securing groundwater, strengthening channels and reducing land degradation.

Figure 18. Engineering flood protection measures
**Flood protection:** The Master Plan plans 59.5km of channel (C1 – C24) is planned and C-1, C-2, C-3, C-11, C-13, C-14, C-20, C-21, and C-24 flood protection channel infrastructure to be built. C-3, C-14, C-15 will be built with flood protection dams. Further flood protection dams will be built at Dari-Ekh, Sharkhad, Urgakh Naran and Unur khoroolol where there are deep ravines.

**Stormwater:** 82.5km of stormwater infrastructure will be built to ensure rainwater run-off is directed out of Ulaanbaatar during periods of high rainfall. The Master Plan plans for category 1 and category 2 roads to have open and underground road stormwater management systems.

**Extreme (1% probability) flood protection:** Some of Ulaanbaatar’s developed areas are in low-lying areas and within the river floodplain. To address these issues, flood protection infrastructure will be built to protect the areas along the Tuul, Uliastai, Selbe and Tolgoit rivers (See table 8).

Table 9. Flood management

<table>
<thead>
<tr>
<th>Name</th>
<th>Measurement</th>
<th>Planned 2020</th>
<th>Planned 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuul river floodbank extension</td>
<td>km</td>
<td>4.5</td>
<td>26</td>
</tr>
<tr>
<td>Building Uliastai river east floodbank</td>
<td>km</td>
<td>7.6</td>
<td>1.3</td>
</tr>
<tr>
<td>Rehab the Uliastai river west floodbank</td>
<td>km</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>East Floodbank of Selbe river</td>
<td>km</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>16.1</strong></td>
<td><strong>31.1</strong></td>
</tr>
</tbody>
</table>

**Flood plain:** Most of Ulaanbaatar’s built up areas are located near the Tuul River. The Master Plan proposes 13.4km of flood plain protection infrastructure to be built in the western industrial area and along the Uliastai River.
12. IMPLEMENTATION OF THE MASTER PLAN

The following actions need to be taken to implement the Ulaanbaatar City Master Plan 2030.

Legislative and management framework
In order to facilitate the implementation of the Master Plan 2030, a suitable administrative and management structure for Ulaanbaatar’s local government will be introduced and will include independent investment and planning functions. Capital City, Ulaanbaatar City, Ulaanbaatar Region territory jurisdictions and description and classifications of towns and city classifications will be defined and legislated.

Socio-economic policy strategy
The socio-economic policy strategy aims to achieve economic independence of the city, enable financing of future projects, build cooperation between the government and private sectors and increase the opportunities for long-term financing. Also, the policy includes establishing a financial corporation for the maintenance of infrastructure, reduced taxes for regional cities and towns, adapting high technologies and public participations for the Master Plan 2030. The approach to the phased implementation and financial investment of the Master Plan is shown below.

Figure 19. Phased Master Plan implementation and investment

ULAANBAATAR 2030 MASTER PLAN IMPLEMENTATION AND INVESTMENT PHASES

In order to implement the Master Plan’s mission and goals there are three phases as follows:
- Phase One: 2014 - 2017
- Phase Two: 2018-2021
- Phase Three: (long term) 2022-2030

<table>
<thead>
<tr>
<th>Phase</th>
<th>Goals for Phase One</th>
<th>Goals for Phase Two</th>
<th>Goals for Phase Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>25.4 trillion MNT</td>
<td>42.3 trillion MNT</td>
<td>28.9 trillion MNT</td>
</tr>
<tr>
<td></td>
<td>needed during 2014-21</td>
<td>needed during 2014-21</td>
<td>needed during 2022-2030</td>
</tr>
<tr>
<td>2017</td>
<td>12.0 trillion MNT</td>
<td>13.4 trillion MNT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>needed during 2014-17</td>
<td>needed during 2018-2021</td>
<td></td>
</tr>
</tbody>
</table>
FURTHER INFORMATION ON THE MASTER PLAN

For further information on the Master Plan contact the Capital City Master Planning Agency.
Website: www.mpa.ub.gov.mn
Khangarid Tower level 11 and 13, Chingeltei District 1, Ulaanbaatar 15160, Mongolia
Telephone: +976-11-320461; Fax: +976-11-321808

The Master Plan 2030 is available online from the following website:

Information on the monitoring and implementation performance of the Master Plan can also be obtained from the Open Government Hotline 11-11 Center
Telephone: 1111 Website: www.11-11.Mn
Maps used in this summary are simplified versions of maps in the Master Plan 2030 and were prepared by architects and designers at the Urban Planning, Architecture and Design Institute of Ulaanbaatar City. The complete versions of maps can be found at: http://www.mpa.ub.gov.mn/index.php/neelttei-medeelel/et/1007-2020-2030.html.
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