11 POLICIES FOR SUSTAINABLE ENVIRONMENTAL MANAGEMENT

11.1 Mitigation of Environmental Load

1) General Policy on Environmental Management

The future image of Ulaanbaatar City answered by the respondents of the HIS are as follows: the first “Clean”, the second “Harmony”, and the third “Peaceful”, etc. Many respondents regarded air pollution and degrading green area (park) as the most critical environmental problems in Ulaanbaatar City.

A basic policy for environmental management is “**Environmentally sustainable development**”. This policy can be achieved by the following measures:

(a) To provide clean and safe environment:
- Securing clean air and water
- Creating hygienic living environment

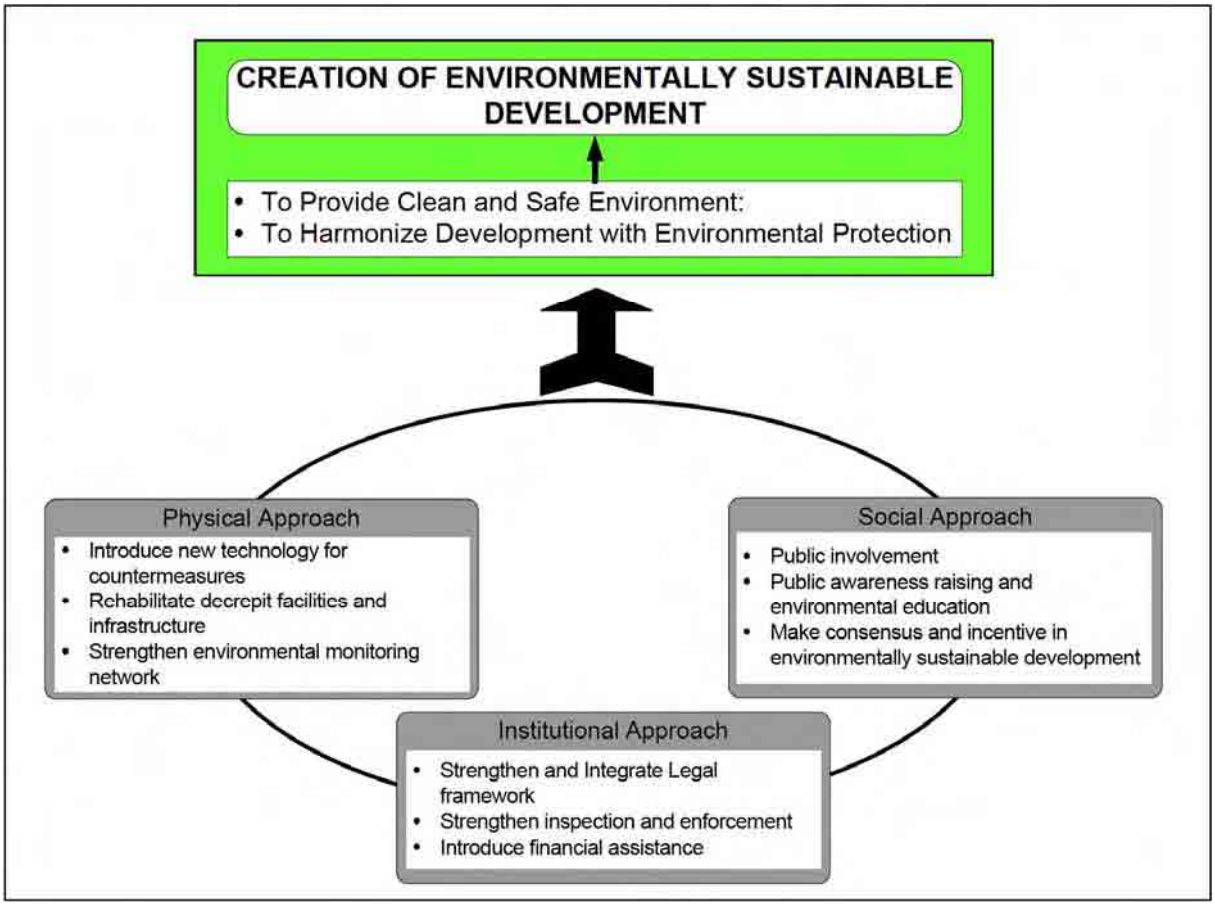
(b) To harmonize development with environmental protection
- Achieving sustainable development
- Promoting happy life and amenity zones

Environmental problems in urban areas are complex. In the past, environmental problems or pollution problems showed a simple aspect that “Polluter = Industry” and “Victim = Citizens”. However, nowadays, it is difficult to distinguish Polluter and Victim in the urban environmental problems such as air pollution caused by transportation, waste and sewage from everyday life, etc.

In addition, environmental management in the past was focused on techniques and process of “how to mitigate impact by pollutions”. However, the recent rapid increase of population and mass consumption by the change of life style have drastically accelerated environmental degradation. No longer only coping with the technique and process can solve the aggravation of pollution; accordingly it is important to introduce adequate reduction measures to “reduce pollution load from the sources” and “introduce an effective resource use and saving”, and “recycle and reuse resources”.

For the environmental management, it is suggested to formulate multiple approaches involving communities and the private sector. Multiple approaches consist of the following three (3) approaches: (a) physical approach, (b) institutional approach, and (c) social approach. The physical approach can be called a “hard approach”, whereas institutional approach and social approach are “soft approaches”. Figure 11.1.1 shows a basic concept on environmental management.

Figure 11.1.1 Basic Concept on Environmental Management



Source: JICA Study Team

The soft approach has an advantage that it can enhance adequate planning, the control of harmonization between development activities and environmental protection, and a consensus building between among the government, developers and stakeholders.

(b) **Physical approach:** We do not deny that the “hard approach” is the most important action for environment management. It is very important to develop physical infrastructures in order to provide comfortable and safe environment and to improve environmental conditions.

(c) **Institutional approach:** A proper and clear legal and institutional system is also very important to balance development and environmental protection. The concepts below are proposed to be introduced in order to enhance efficient exercise of the legal system and incentives for environmental protection. Besides the capacity building of the government to plan sustainable development and lead citizens to an environmentally friendly society, it is important to inspect and monitor development activities which cause environmental disruption.

- Polluter-Pay-Principle
- Strengthening of a tax preference system for installing environmentally friendly system, and penalty against illegal activities

(d) **Social approach:** Top-down approach by the government has limited power to create truly comfortable and safe environment for citizens. It is necessary to make a plan by involving the public. The following social approaches shall be important:

- Public involvement at the early stage based on the concept of Strategic Environmental Assessment (SEA)
- Public awareness raising through public enlightenment and environmental education

Social approach shall be employed not only by the government and/or developers but also by the citizens and the stakeholders. The stakeholders should not be passive to the environmental policy, but active towards development and environmental protection and importantly be responsible. To this end, public enlightenment and education are definitely important.

2) Proposed Management Program

(1) Air Quality Management

Air pollution is recognized as the most crucial environmental problems in UB City; hence UB City has established a special team for tackling this issue. Key issues on air quality management are listed below:

(i) A major energy source of power and heating generation is coal; most of the power plants (power/heating) and heat-only-boilers (HOBs) have not been installed adequate exhaust gas treatment facilities. The three power plants (TPSs 2, 3, and 4) consume approximately 3.4 million tons of coal per year.

(ii) Air pollution load from the industrial sector has not been controlled well, and not inventoried.

(iii) Monitoring and inspection system does not function well.

(iv) More than 400 small and/or medium scale HOBs have been operated, however most of them are not under the control of the government. Approximately 1.0 million tons of coal is annually consumed by the HOBs.

(v) 60% of population in UB City live in Ger area and use traditional household stoves, consuming approximately 0.5 million tons of raw coal per year. It is reported that more than 90% of pollution load is generated by low efficient household stoves in Ger area.

(vi) Due to rapid population increasing, the number of vehicles has reached more than 100,000. This situation aggravates roadside air quality.

(vii) Dust pollution is generated from bare land by deforestation and unpaved roads.

It is recommended to introduce the following measures for reduction of air pollution load:

(a) **Physical approach**

- To introduce an effective coal energy use by coal saving combustion technology, coal improvement, etc.
- To rehabilitate aging HOBs and the electric and heating networks
- To shift the heating system in Ger area from traditional household stoves to the central or local cluster network systems
- To introduce a higher insulation technique for houses and buildings
- To install adequate exhaust gas treatment facilities to the power plants and the HOBs
- To introduce low emission vehicles and to strengthen the public transportation

network

- To improve road conditions for smooth traffic and pave roads to prevent from dust generation
- To plant trees and/or grasses at bear land
- To introduce new technology for shifting to renewable energy
- To improve solid waste disposal sites to prevent from dust generation

(b) **Institutional approach**

- To amend and redevelop legal framework, including a new law for “Air Pollution Fee”.
- To strengthen legal framework and inspection system.
- To promote introduction of renewable energy by subsidy, tax exemption, etc.
- To develop emission gas standards on the industries, and to strengthen the inspection system.
- To strengthen emission gas standard of vehicles and enforcement of the car inspection system.
- To prohibit from use of cars whose emission gas levels do not meet the standard level.
- To strengthen inspection and penalty against the violation of the laws and regulations.
- To promote introduction of a new technology of least environmental load such as low emission cars, clean coal, improved stoves, etc.
- To control and prohibit inadequate in-house combustion of waste such as used tire, plastics, etc.
- To promote and regulate development of green space in building construction areas
- To enhance public transportation including a mass transit, and to control the use of private vehicles.

(c) **Social approach**

- To develop programs of environmental education and public awareness raising for environmental protection
- To promote public involvement in plantation and greening programs, and campaign cleaning activities in roads and riversides
- To raise incentive and consensus on legal compliance.

(2) Water Quality Management

Key issues on water quality management are listed below:

(i) Due to the rapid population growth, water consumption has increased, which leads to the increase of wastewater especially in Ger areas. Current capacity of existing central wastewater treatment plants (WWTPs) is approximately 165,000m^3/day. It meets the demand of the apartment areas where the sewerage network is connected. However domestic wastewater from Ger area, even though its volume is relatively small, has been discharged without proper treatment because of no connection to the central sewerage pipeline.

(ii) A considerable amount of wastewater is leaked from the aging sewage piped network.

(iii) Khargia Industrial WWTP was operated in the central Industrial Zone with a capacity of 13,800m^3/day. However due to outdated facilities and poor maintenance over more than 30 years of use, operation has almost been shut down. Waste water, containing toxic substances such as chromium, inflows to the CWWTP; however the treatment level is low and most of the toxic substances are discharged without treatment.

In the above situation, the river water has been polluted as shown in Table 11.1.1.

Table 11.1.1 Result of Surface Water Quality Monitoring

Location	COD (mg/L)	BOD (mg/L)	DO (mg/L)
Standard Value	< 10	< 10	> 9
Terelj	9.8	5.43	9.9
Nalaikh Sewage Plant	116.6	6.82	12.09
Bayanzurkh	29	4.54	9.61
Zaisan	32.7	6.4	11.7
Yarmag	68.6	6.04	11.9
Songino Bridge	117.6	2.41	5.61

Source: Mongolia Environment Monitor 2004, The World Bank based on WHO (2003)

It is recommended to introduce the following measures for reduction of water pollution load:

(a) **Physical Approach**

- To rehabilitate and strengthen the existing WWTPs
- To rehabilitate and extend the sewage pipe network
- To build new WWTPs including industrial wastewater treatment
- To build a sewage sludge treatment facility
- To introduce adequate sanitation facilities such as ECOSAN in Ger area
- To develop a water recycling system

(b) **Institutional Approach**

- To amend and redevelop the legal framework
- To develop new laws regarding Water Fee based on the policy of “Polluters – Payment - Principle”.
- To strengthen the legal framework and inspection system
- To promote introducing an adequate sanitation system in the Ger areas such as ECOSAN.
- To develop discharged water standards on the industries, and to strengthen the inspection system
- To strengthen the inspection and penalty against violation of law
- To promote introduction of a local cluster type sewerage system including independent treatment facilities such as combined type septic tanks
- To prohibit discharging wastewater without treatment both from the industries and residents
- To promote introduction of a water recycling system in the industries and housing development projects

(c) **Social Approach**

- To develop programs of environmental education and public awareness raising for environmental protection
- To promote public involvement to plantation and greening programs, and campaign of cleaning roadsides and riversides
- To raise incentives and consensus for compliance of the laws and rules

(3) Solid Waste Management

According to the JICA Study on Sold Waste Management Master Plan Project in 2007, key issues on solid waste management are as follows:

- The existing four (4) solid waste disposal sites are open dumping sites; they have been designed only for domestic and urban waste; however construction waste, medical waste and industrial waste have been also inadequately brought in the sites.
- Disposal capacity in Ulaan Chuluut Disposal Site, the biggest site in UB City, will be filled up to the capacity by 2010
- Due to a poor collection service in Ger areas, a huge amount of solid waste has been inadequately treated by residents themselves, or illegally dumped. Burning waste by household stoves generates air pollution.
- Plastic waste, coal ash, etc. are scattered from the disposal sites.
- Huge coal ash has been generated by operation of power plants, HOBs and household stoves
- Lack of finance has led debasement of collection service. Installment and maintenance of collection equipment cannot meet necessary quality.
- Despite lower collection service in Ger areas, collection fee is higher than in apartment areas. Hence unpaid level is high, and then this situation leads to a vicious circle in collection service
- Construction waste, medical waste and industrial waste have not been adequately treated

It is recommended to introduce the following measures for solid waste control:

(a) **Physical Approach**

- To improve condition of the existing disposal sites from open dumping type to sanitary landfill type
- To develop a new disposal site near the Ulaan Chuluut disposal site
- To rehabilitate the aging collection equipment such as trucks, cranes, etc., and to increase the number of equipment to achieve the adequate collection service
- To develop a recycling facility with RDF (Refuse Derived Fuel) plant
- To develop a solid waste treatment facility for medical waste and toxic waste
- To develop a coal ash recycling plant

(b) **Institutional Approach**

- To amend and redevelop legal framework on solid waste management.
- To promote community involvement for collection service and waste management
- To establish a community fund for waste management
- To promote 3R's (Recycle, Reuse and Reduction) with adequate financial support
- To organize an institution or private organization for separate collection and

recycling, involving waste pickers.

- To strengthen legal framework and the system of inspection on inadequate in-house treatment and illegal dumping
- To strengthen inspection and penalty against the violation of law
- To redevelop collection rules such as prohibiting using of dust-shoot in apartment houses
- To strengthen operation and maintenance in the collection service
- To reformulate the roles and responsibility on solid waste management at the levels of UB City and Districts
- To revise a collection fee in consideration of income level of both apartment and Ger area residents

(c) **Social Approach**

- To develop programs of environmental education and public awareness raising for the 3R's
- To establish a community-based organization for collection service and management
- To promote public involvement to cleaning campaign
- To raise incentives and consensus on legal compliance

3) Key Points for Enhancing New Technologies

In order to enhance introduction of new technologies for heating improvement, the following key points are proposed:

(1) Co-benefit approach

Co-benefit Approach means basic concept to tackle multiple purpose solutions and to raise wide variety of benefit. In the environmental management, programs and projects are often interrelated mutually. Therefore, projects and programs can be multiple-purpose solutions. Table 11.1.2 shows types of projects and their expected benefits which are related to environmental management.

(2) CDM (Clean Development Mechanism)

As described in Figure 11.1.2, a CDM project generates credits by emission trading of the reduced GHG (Green House Gas) between the host country and the investing country. The following advantages can be expected:

- To raise incentives of investors for the project
- To raise feasibility of the project
- To promote environmentally friendly projects

The CDM scheme is applicable to raise the feasibility of project implementation by integrating environmental strategies into a urban development project. The following strategies for reduction of air pollution can be eligible for CDM projects.

- Energy-saving by construction and/or rehabilitation of the existing power plants and the HOBs
- Improvement of a heating network in Ger areas
- Improvement of fuel quality, change of fuels, e.g., from coal to Compressed Natural Gas (CNG)

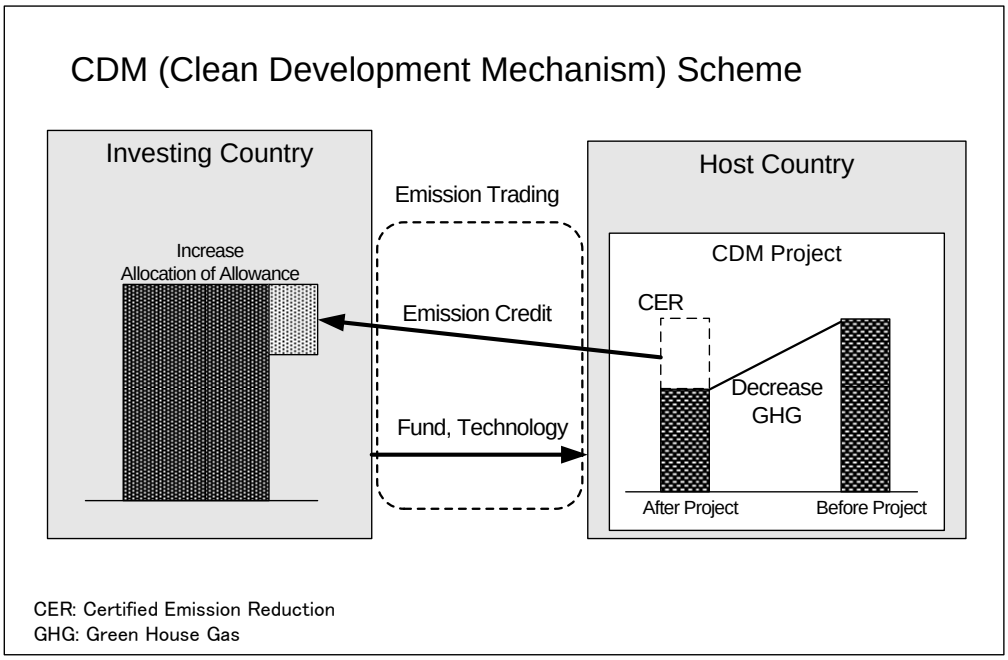
- Utilization of low emission vehicles
- Improvement of public transportation
- Utilization of renewable energy, etc.

Table 11.1.2 Expected Benefit based on Type of Project

Type of Project	Expected Benefit
RDF Power Generation	• Energy improvement • Reduction of solid waste • Reduction of GHG (Green house gas)
Power Generation by Sewage Sludge	• Energy improvement • Reduction of sewage sludge • Reduction of GHG
Mass Transit, Public Transportation	• Mitigation of traffic congestion • Mitigation of air pollution • Fuel energy saving
Improved Stove, Coal Improvement	• Reduction of coal use • Reduction of burden on income
Rehabilitation of HOB	• Reduction of coal use • Mitigation of air pollution • Fuel energy saving • Reduction of GHG
Micro Hydropower Generation	• Renewable energy use • Water resource management • Increase of water supply • Disaster prevention
Solar Power	• Renewable energy use • Mitigation of air pollution • Fuel energy saving • Reduction of GHG
Biomass	• Fuel energy saving • Reduction of GHG • Reduction of domestic waste

Source: JICA Study Team

Figure 11.1.2 Procedure of CDM Scheme



Source: JICA Study Team based on Ministry of Environment, Japan and Global Environment Center Foundation

In addition, there are various cases same as the above strategies, applicable to CDM activities as follows:

(i) Utilization of methane gas from the waste dumping sites

(ii) Increasing fixation of CO_2 by reforestation

(iii) Utilization of compost/sludge generated in the sewage facility, etc. .

Table below describes some cases that expect CO_2 reduction.

Table 11.1.3 Sample Cases on CO^2 Reduction

Type of Activity	Case Condition	Expected CO_2 Reduction and CER[1)]
Improved Stove	Replace traditional stoves to improved stoves in 10,000 households	50,000 tons/yr (US$ 750,000)
Rehabilitation of HOBs[2)]	Replace 1.5MW X 2 out-dated boilers to newly designed high efficiency boilers	12,000 tons/yr (US$ 180,000)
Hydro Power Generation[3)]	Install 12MW scale of micro hydro power plant.	29,000 tons/yr (US$ 435,000)

Note: 1) Estimated CER = US$ 15 / ton CO_2
2) Retrofit Programme for Decentralised Heating Stations in Mongolia, 2005
3)Taishir Hydropower project in Mongolia, 2007
Source: JICA Study Team

11.2 Air Quality Management

1) Tackle on Air Quality Management by Ulaanbaatar City

Major reasons of aggravation of air quality are identified as below:

(i) Emission from power plants and heat-only-boilers
(ii) Emission from household stoves and refuse burning
(iii) Vehicle exhaust
(iv) Dust from dry land and waste dumping site
(v) Forest and/or grass fire.

As described in Chapter 15, air pollution in winter is critically high even though the annual average is basically below the National Standard. This means that most serious air pollution load is caused by heating process. According to the study in 2006, Over 90 % of air pollution load was generated by household stove and small heat-only-boilers and illegal burning in Ger areas.

Ulaanbaatar City has recognized air pollution as one of its most critical problems, so it has formed a special committee to tackle the issue. In Resolution No. 218 of the Parliament of Mongolia dated 5 September, 2007, several action plans were approved, as shown in Table 11.2.1.

Some of the action plans mentioned above were amended to enhance the legal framework on mitigating air pollution, as indicated in Resolution No.46 of the Parliament of Mongolia dated 28 September 2007.

In the resolution, the following detailed action plans were approved for implementation:

(i) Develop draft laws and regulations listed in Resolution No.46.
(ii) Submit issues on:
- finding financial sources to be used for Ger area improvement;
- construction of apartments at 10 primary sites;
- redevelopment of Ger areas in 2007;
- construction of temporary apartments for 1,000 households in connection with the Ger area building-up program; and
- intensification of implementation of housing supply policy and extension of infrastructure network.

(iii) Implement projects and actions to develop smokeless, economical, human- and environment-friendly fuel, and limit the use of raw coal in Ulaanbaatar City.
(iv) Conduct feasibility study and design work on new thermal and power sources including appropriate locations and funding.
(v) Implement projects and actions in cooperation with the public sector, academe, etc. on changing the design and structure of Gers to ensure better heat insulation, and supply Ger areas with night-time electricity at discounted rates for heating purposes.

Table 11.2.1 Action Plans for Air Pollution Management Approved by the Parliament of Mongolia

	Action Plan	Responsible Agency	Implementation Period
1	Enact new law on "air fee" based on "polluters pay" principle and amend related laws/regulations.	MNE(1), MJIA(2)	3rd quarter of 2007
2	Enact law on limited use of raw coal.	UB City, MNE	4th quarter of 200
3	Promote production of smokeless, environmentally friendly, and economical fuel and gas.	MFE(3), UB City, MNE	4th quarter of 2007—4th quarter of 2010
4	Build temporary apartments with infrastructure supply for 100 households to improve Ger areas..	MCUD, UB City	2008—2009
5	Redevelop Ger areas by building apartments in 10 priority sites.	MCUD, UB City	2007—2009
6	Conduct F/S and design new heating and power sources.	MFE, UB City	from 2008
7	Study health impact of air pollution.	MNE, MH(4)	2007—2008
8	Improve laboratory equipment and facilities for monitoring impact on human health.	MNE, MH	from 2008
9	Involve all aimag centers in programs/projects.	MNE, MFE	2009—2010
10	Provide thermal power stations.	MFE, MNE, SIA(5)	2008—2009
11	Organize financing work for replacing low-pressure heat-only boilers to electric and gas heaters.	MNE, MFE	2007—2008
12	Restrict use of raw coal by shifting to renewable energy, gas and fuel, and restrict low-pressure heat-only boilers.	UB City, SPIA	2007—2008
13	Reduce smoke pollution generated by transportation sector.	UB City, MRTT	2007—2008
14	Solve land issues for construction and operation of 8 gas stations.	UB City	from 2008
15	Promote environmentally friendly vehicles, such as low fuel consumption vehicles, and enforce law on banning vehicles that do not meet standards.	MJIA, MRTT	2008—2009
16	Enhance legal framework for fuel improvement.	MFE, MIC(6), MJIA	from 2008
17	Prohibit import of used tires.	MIC, MOF(7),	
18	Establish "Day without Vehicles", and promote air pollution reduction efforts.	UB City, MRTT, Traffic Police	from 2007
19	Install test laboratory, monitoring and inspection network for oil production.	GCO(8), MRTT	from 2008
20	Take required action to improve pavement of roads connecting Ger areas.	UB City	2008—2010
21	Look for financial sources and strengthen capacity for air quality matters.	MNE, MOF	2007—2010
22	Reestablish the National Board in charge of air quality.	MNE, MECS(9)	from 2007
23	Supply Ger areas with night-time electricity at discounted rates for heating purposes.	MFE, MNE	from 2008
24	Change Ger structure and design for more effective heat insulation.	MCUD, UB City	2008—2010
25	Develop optimal financial system on procurement of houses for low-income people.	UB City, MOF	
26	Provide tax exemptions and financial support systems to high-technology businesses.	UB City, MFE, MIC, MOF	2008—2010
27	Increase green areas.	UB City, MNE	2008—2010
28	Improve solid waste management to mitigate dust pollution at disposal sites.	UB City, MNE, MH	2008 - 2010
29	Develop public information systems to raise public awareness.	UB City, MFE, MNE	2007—2010
30	Issue government and Capital City bonds to promote financial solutions to air quality improvement.	UB City, MOF	from 2008
31	Create job opportunities in economic zones and aimag centers, and intensify improvement of local market conditions.	MIC, MFA(10)	2008—2010
32	Develop and establish satellite cities to decongest UB City and conduct a conceptual study to develop highways and metro systems linking these cities.	MIC, MRTT, MOF	2008—2010

Source: Resolution of Parliament of Mongolia No. 5, 2007
Note: (1) MNE: Ministry of Nature and Environment, (2) MJIA: Ministry of Justice and Internal Affairs, (3) MFE: Ministry of Fuel and Energy, (4) MH: Ministry of Health, (5) SIA: State Inspection Agency, (6) MIC: Ministry of Industry and Commerce, (7) MOF: Ministry of Finance, (8) GCO: General Custom Office, (9) MECS: Ministry of Education, Culture and Science, (10) MFA: Ministry of Food and Agriculture.

(vi) Develop satellite cities to decongest Ulaanbaatar City by:

- intensifying the improvement of local markets;
- creating jobs in regional and aimag centers within the framework of reducing air pollution;
- conducting feasibility studies on highway and/or metro development to connect satellite cities;
- applying to aimags legal framework and its enforcement which are effective at national level
- establishing free zones in aimags in accordance with relevant laws and regulations; and
- studying the increase in investments in developing infrastructures and submitting reports to be discussed in the parliament.

(vii) Allocate at least Tg. 50.0 billion annually from 2007 to 2010 to implement actions such as the improvement of infrastructure in Ger areas, e.g. incorporating central budget with grant and preferential loans by donor countries and/or international financial institutions.

2) Urgent Action Plans for Air Pollution Reduction

As described above, major countermeasures for air pollution reduction are related to energy improvement. It is expected that housing improvement from Ger to Apartment, clean coal technology and improved stove can drastically mitigate air pollution. It is roughly estimated to reduce air pollution load up to 70 % of current level by improving higher efficiency heating and shifting from coal based energy supply to liquid/gas fuel based and/or renewable energy.

For above reason urgent action shall aim at quick implementation and Ger areas improvement. Therefore we propose “coal improvement (semi-cokes, briquette)” and “improvement of small/medium scale HOBs”.

(1) Coal Improvement

Coal improvement projects have been implemented by both government and private sector, also by international and Mongolian bodies, however unfortunately their progress is not satisfied with demand in Ger areas. The major reasons why people do not have little incentive to use improved cokes are:

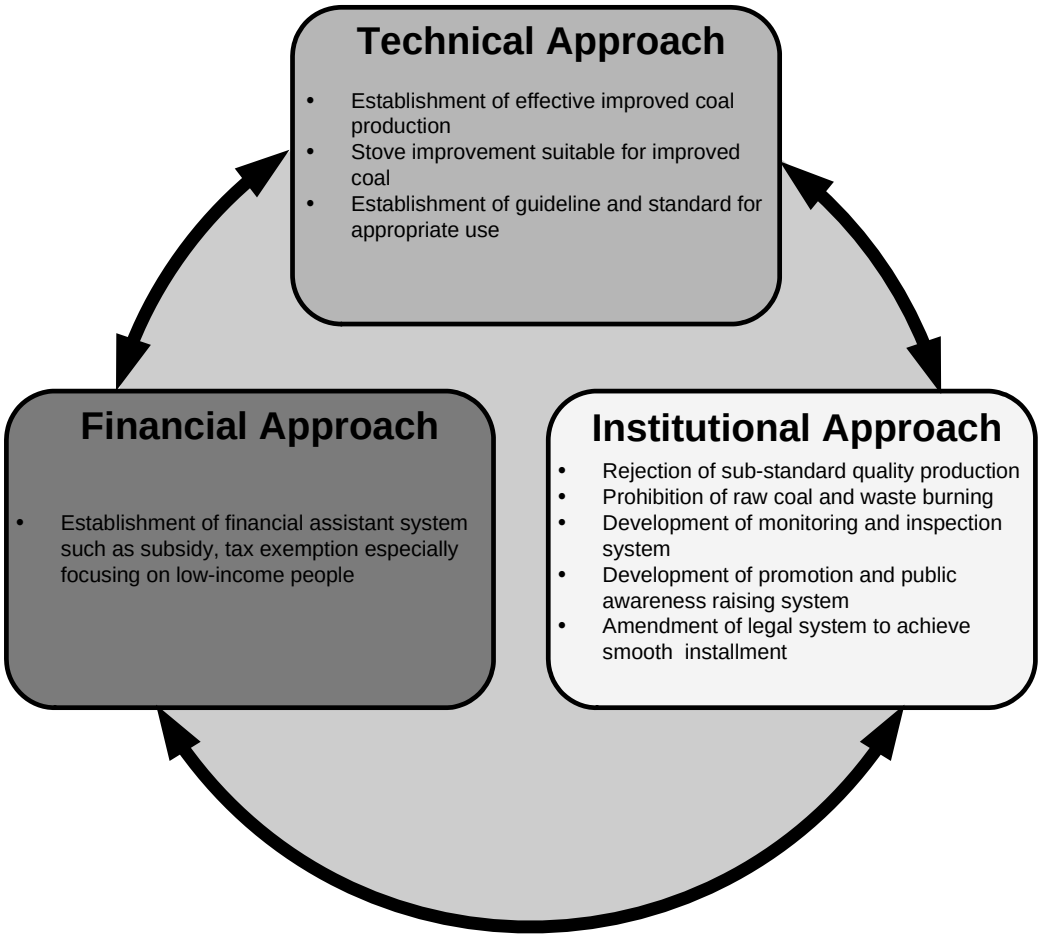
(i) Unit price of semi-cokes and briquette is also costly.

(ii) The qualities of improved cokes are unequal due to lack of standardization. Hence people do not believe the quality.

(iii) There is know-how in order to use improved cokes effectively, however most of users do not know well. And some traditional stoves are not suitable for improved cokes, hence stove improvement is also necessary.

Therefore it is necessary to formulate comprehensive actions focusing on enhancing appropriate improved coal use as described in Figure 11.2.1.

Figure 11.2.1 Basic Approach on Coal Improvement



Source: JICA Study Team

(2) Improvement of Small/Medium Scale of HOBs

It is reported that more than 400 small/medium scale individual HOBs are operated. However approximately 20 HOBs are managed by responsible government agency. Although another government agencies such as Ministry of Health manage HOBs, not a few of HOBs especially located in Ger areas are not well managed. Most HOBs are out-dated, especially small/medium scale HOBs, which are mostly installed in Ger areas, has not been attached appropriate environmental devices for heat-efficiency improvement and exhaust gas reduction which are generally installed to power plants and large scale boilers. As a result, it is also reported that not negligible level of air pollution load in Ger areas are generated by HOBs. Therefore, it is concluded that improvement of heating style in Ger areas and improvement of small/medium scale HOBs are urgent issues to be solved.

Most HOBs are not well operated, so that exhaust gas level from each HOBs are not identified. Prioritization for improvement of HOBs is important in order to plan effective HOBs improvement programs. Therefore it is proposed to create below two phases.

(a) First Phase

(i) To prioritize HOBs to be rehabilitated based on inventory survey.
Inventory list shall include:

- Date manufactured;
- Heating capacity;
- Service area;
- Type of fuel and annual consumption;
- Annual volume of exhaust pollution loads; and
- Installed environmentally mitigation devices.

(ii) To strengthen legal and institutional enforcement including registration and environmental inspection system.

(b) Second Phase

(i) To make rehabilitation programs based on the inventory survey.

(ii) To take feasibility study for new technology such as

- Higher effective combustion technique;
- Switching to electric heating; and
- Mix combustion of biomass energy, RDF, etc.

11.3 Water-related Environmental Management

1) Watershed Management

Water resource preservation and protection programs are important to supply good quality and quantity of water. Since UB city is located close to Tuul River, many city development activities have been implemented near the water resource area. Under such circumstances, balance between city development and water resource preservation/protection is very important, though not easy to be tackled.

Despite the fact that USUG has controlled development activities within the area of a 500-meter radius from the water intake area, water quantity has been worsened due to unplanned developments and poor management at the upper stream. And a poor sanitation system also has degraded water quality. Therefore, a comprehensive watershed management covering the upper steam is important.

Major purposes of watershed management can be certainly to keep enough water quantity and to protect water quality from pollution. It shall be also emphasized: to conserve ecosystem, prevent from disaster, and create amenity zone and recreation area.

It is not reasonable and realistic to prohibit any development in the watershed without exception though development activities shall avoid adverse impacts. For instance, dam construction, for flood control and water catchment, shall be planned to minimize the aggravation of ecosystem. Therefore the following concepts are recommended for establishment of comprehensive watershed management.

(a) **Nature-friendly River Improvement**: Physical approach harmonizing with natural environment: For instance, common countermeasures for river flooding are to construct concrete embankments, etc. However such measures may deteriorate the river conditions, its ecosystem, and the landscape. A gentle-sloped embankment with natural stones would maintain the conditions and ecosystem of the river.

(b) **Environmental Zoning:** It is proposed to classify the watershed area based on location and environmental capacity (water resource) in stead of uniform control over the watershed. The upper stream shall be managed more stringently. Temporarily the following zones are proposed:

  (i) Core Zone where any developments except for the academic research shall be prohibited.

  (ii) Buffer Zone which functions as a buffer to protect the core zone. In this area, development shall be designed to protect the core zone.

  (iii) Limited Zone where sustainable development such as eco-tourism and river parks is accepted, but shall be designed with environment-friendly measures.

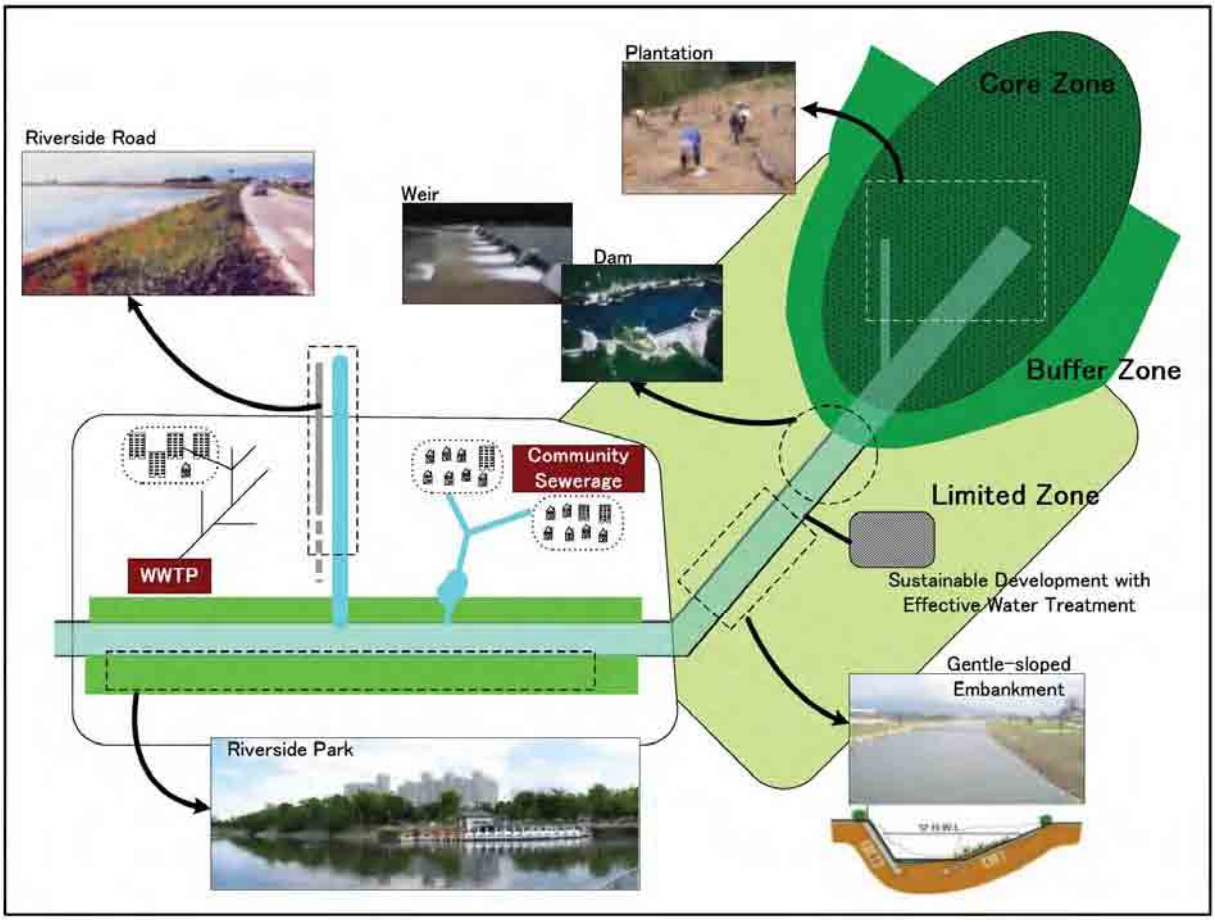
(c) **Institutional Improvement:** Adequate and clear legal and institutional framework is important to control development activities. In addition, an integrated monitoring system of river and underground water quality, wastewater control and ecosystem (forest) conditions shall be developed. Inspection and enforcement are also important.

(d) **Public Awareness Raising:** Effectiveness of watershed management through physical actions and actions by top-down approach is limited. In addition to these actions, it is very important to raise peoples' awareness, perhaps with some incentives, on watershed preservation and protection in order to establish and implement

adequate actions.

Figure 11.3.1 describes basic concept on watershed management and examples of technical measures.

Figure 11.3.1 Basic Concept on Watershed Management



Source: JICA Study Team

2) Water Quality Management

Water resource shall be protected from pollution and contamination, especially from soil and water contamination caused by lack of sanitation and waste management.

11.4 Urban Amenity Creation and Management

1) Necessity of Urban Amenity Creation and Management and Current Issues

UB City has experienced rapid urbanization accompanied by new development and redevelopment activities, thereby its landscape cannot remain unchanged but has been transforming dramatically. Urban and infrastructure development can raise public service level and enhance quality of residents' life. On the other hand, uncontrolled development may possibly destroy existing natural environment, historical and cultural properties, beautiful landscape, etc. It may result in making people feel unhappy about the situation and adversely affect people's mentality about development.

Under such circumstances, urban amenity creation and management is a key issue to avoid this undesirable result and to achieve sustainable urban growth. Urban amenities contribute to enhancing living environment and quality of residents' life to create diverse human activities. They are also essential to create an appealing city indispensable to become one of international tourism destinations. However, at present, urban amenity is not sufficiently created and managed in UB City due to the following issues:

- Destruction of historical and cultural properties and deterioration of their surrounding environment due to uncontrolled urban development
- Lack of legal and institutional coordination between urban development activities and protection system for historical and cultural properties
- Lack and low-level maintenance of green space, parks and street planting
- Insufficient development of recreational space by utilizing surrounding natural environment such as waterfront space
- Uncontrolled urban development in Natural Protection Areas
- Deficiency of legal and institutional system for creation and preservation of beautiful landscape

2) Basic Viewpoints for Urban Amenity Creation and Management

The followings need to be recognized as basic viewpoints for urban amenity creation and management.

(a) Utilization of Characteristics and Existing Resources in Communities/ Areas

It is important to emphasize the characteristics of communities and areas in the aspects of natural environment, historical and cultural context, socio-economic activities, etc. Urban amenity should be created with the best use of these existing resources in a harmonious way.

(b) Awareness of Significance of Urban Amenity Creation and Management

If residents do not recognize significance of local characteristics in their communities, they might have no interest in protecting urban amenity including specific landscape which may be destroyed by urban development activities or renovations. In order to protect specific landscape, it is important that both of residents themselves and the government clearly recognize its value and that they preemptively take measures for urban amenity creation and management including establishment of related legal and institutional framework.

(c) Role Sharing among Government, Community and Private Sector

It is important to share the roles for urban amenity creation and management among the government, communities and the private sector based on common recognition about importance of urban amenities.

Government: Basic roles of governmental organizations are to develop legal and institutional framework for urban amenity creation and management, to implement urban amenity enhancement projects, and to support and control private development activities for urban amenities both technically and financially.

Community: Communities are major benefiters of urban amenities, therefore their opinions can be useful to create urban amenities. It is considered that the first step for the communities is to be involved in landscape management; and finally it is more desirable for the communities to actively participate in and lead the creation of urban amenities.

Private Sector: Roles of the private sector are also important to introduce an adequate planning technique for creation of better landscape because it is a major actor in urban development activities. Private developers need to recognize that creation and management of urban amenities enhance the values of their properties and their surrounding areas.

(d) Enhancement of Urban Amenity based on Utilization of Market Function

Developers tend to pay little attention to creation of urban amenities in order to maximize profits by development activities because urban amenity creation generally increases development cost. Therefore, legal and institutional system including economic incentives system should be established to guide and encourage developers to create urban amenities. As an example, there is an incentive system in Japan for creation of public open space as explained in Section 11.4.6. In addition, the government needs to make developers notice that urban amenity creation can contribute to increasing market values of their properties and the surrounding areas.

(e) Sustainable Approach on Urban Amenity Creation and Management

Sustainable approach needs to be considered for urban amenity creation and management from physical and financial aspects, because better urban amenities need to be created and maintained through long time. Integrated methodologies for urban amenities should be established by taking into consideration public investment, market mechanism, private participation, tourism development, etc.

3) Visions for Creation and Management of Urban Amenity for Ulaanbaatar City

The following visions are proposed for urban amenity creation and management for UB city:

(a) Representing Supreme Dignity as the Capital City Enabling Citizens to be Proud of the Nation

UB City shall express dignity of the nation with unique landscape eligible to be the capital city of Mongolia. The citizens can recognize their identity with pride of the city.

(b) Transmitting Unique History and Culture to the Future Ages

UB City shall preserve historical and cultural features integrated with future urban fabrics to transmit them to future generations. It will deepen and create uniqueness of UB City.

(c) Creating Urban Livability and Providing Relief and Relaxation

UB City shall have livable atmosphere full of diverse human activities and provide invaluable relief and relaxation to the residents and tourists to be one of international tourism destinations.

4) Basic Strategies for Creation of Urban Amenity for Ulaanbaatar City

The following basic strategies should be applied to achieve the above-mentioned visions:

- Creation of Symbolic and Supreme Spaces: Symbolic and supreme spaces enough to represent national dignity should be created with best use of existing significant buildings and public open space. In the surrounding areas, design of new buildings and public open space needs to be appropriately controlled with consideration of this urban context to create impressive landscape.
- Utilization of Historical and Cultural Properties and Integrated Development of Public Open Space: Existing historical and cultural properties should be appropriately preserved and rehabilitated. Urban development in the surrounding areas that might degrade their values should be strictly controlled. In addition, they can also be renovated with preservation of external appearance. Even old shabby industrial buildings observed in UB City can be utilized by renovation to create urban amenity. Importantly, parks and public open space should be developed in an integrated manner with these properties to attract visitors.
- Preservation of Natural Resources in Balance with Development of Built Environment: Natural environment should be strictly preserved in balance with built environment to maintain ecological network from a viewpoint of coexistence of human beings, fauna and flora.
- Development of Recreational Space: Recreational space and facilities should be sufficiently developed with utilization of waterfront spaces.
- Development of Enjoyable Pedestrian-friendly Space: Safe and comfortable pedestrian space should be developed to create urban vitality.
- Promotion of Greening: Street greening and park development should be promoted to create comfortable environment and greenery landscape. Greening promotion system should be considered in private areas.
- Development of Legal and Institutional System for Creation of Beautiful Cityscape: Legal and institutional system such as design guidelines and control system of street billboards should be developed to create harmonious cityscape.

Figure 11.4.1 Bogd Khaan's Green Palace Designated as Historical and Cultural Heritage in UB City

Source: MUDI Report

5) Strategies and Recommended Actions by Area for Urban Amenity Creation and Management

Each of the areas and communities in UB City has its own functions and values. Such existing characteristics should be taken into consideration for urban amenity creation and management. Based on the above-mentioned strategies, the following basic recommended actions are proposed by areas which are depicted in Figure 11.4.2.

(a) Scenic Area: Country-side and Tourism Area

The basic policy is to “Provide comfortable and attractive recreational area for the citizens and tourists to enjoy, relieve and refresh themselves”. Recommended actions are:

- Properly designing and installing recreational facilities harmonizing with natural environment with consideration of tourism development
- Establishing regulations to preserve natural resources including forests, rivers, etc. and control undesirable development

(b) Gateway Area: Airport, Railway Stations and Bus terminals, and Area near the City boundary Gate

The basic policy is to “Give the excellent first impression of the City to visitors”. Recommended actions are:

- Developing proper transportation system for smooth and fast access to the CBD.
- Constructing symbolic landmarks harmonizing with the surrounding areas
- Installing road signs harmonizing with landscape

(c) Downtown Area

The basic policy is to “Represent symbolic and unique features of the City and develop the stately City”. Recommended actions are:

- Developing stately public facilities and squares
- Installing well-designed monuments showing the characteristics of the City
- Promoting beautification of main streets and creating beautiful landscape
- Providing parks and greenery open space which people easily access to
- Controlling building design in harmony with the surrounding areas

(d) Business and Commercial Area

The basic policy is to “Provide an attractive area with lively and vibrant atmosphere”. Recommended actions are:

- Installing high-quality shopping facilities to attract people
- Developing underground malls surrounding railway stations to provide visitors with pedestrian-friendly space in severe climate
- Developing safe and enjoyable pedestrian space by installing street furniture and street planting
- Controlling street billboards and shops

(e) Historical and Cultural Area

The basic policy is to “Express and admire history and culture of the City”. Recommended actions are:

- Appropriately preserving historical and cultural assets to maintain and raise public awareness of the city history
- Developing comfortable parks and green areas integrated with historical and cultural buildings
- Developing tourism-related facilities and renovating old buildings for tourism promotion
- Establishing development and building regulations to conserve and maintain historical structures and the surrounding landscape
- Creating beautiful nightscape by lighting-up

(f) Residential Area

The basic policy is “Establish safe and comfortable living environment”. Recommended actions are:

- Developing participation system for urban amenity creation and management to create good community relationships
- Developing comfortable community park and greenery community roads
- Controlling street signs harmonizing with the surrounding areas

6) Development of Institutional and Legal System for Urban Amenity Creation and Management

(a) Objectives of Institutional and Legal System for Urban Amenity

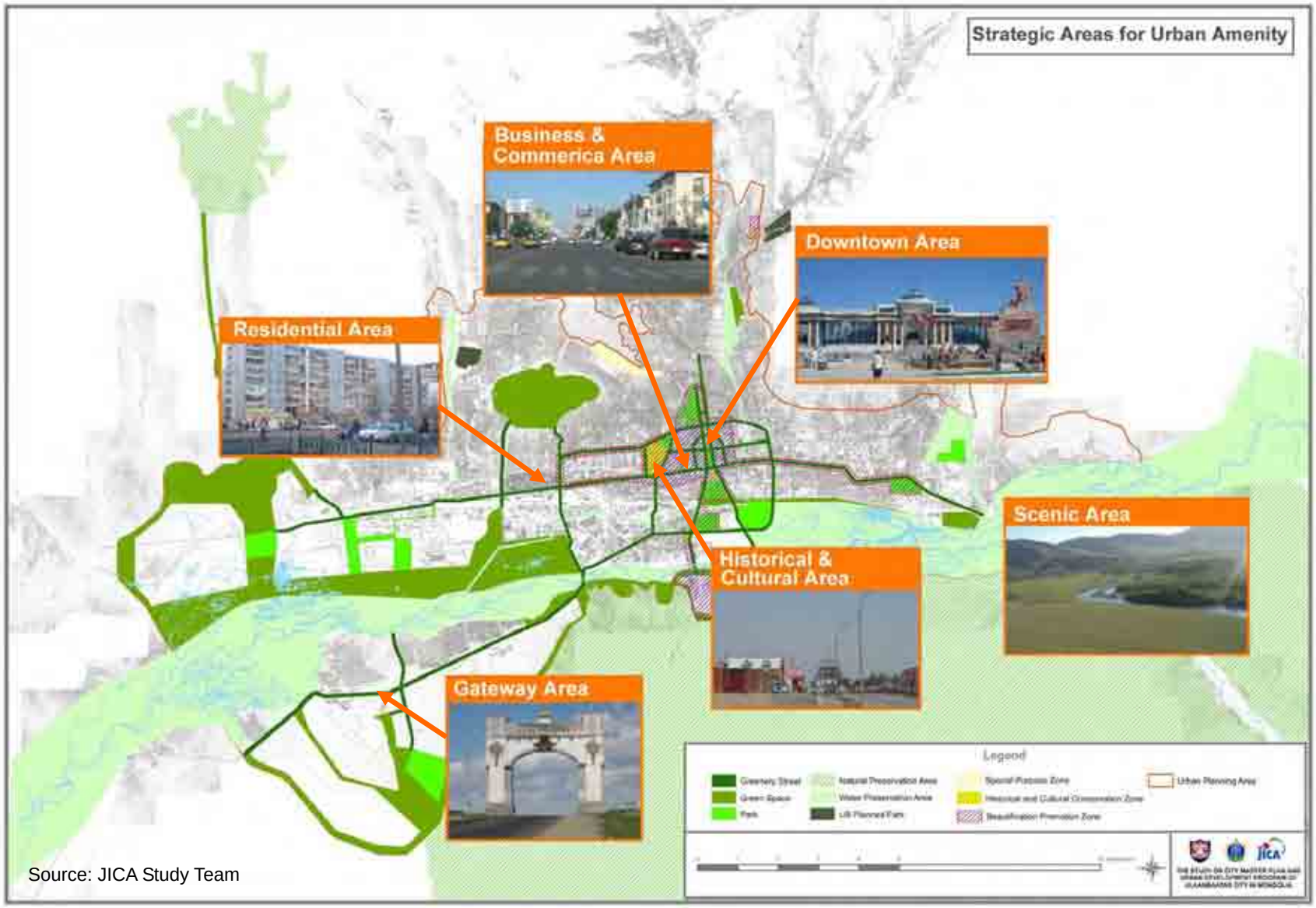
Urban amenity creation needs both of project-based and regulation-based approaches; the former is applied especially for public domains and the latter for private. Beautification projects by public sector can be successfully implemented in coordination with private sectors based on legal and institutional system. Therefore, development of institutional and legal framework as regulation-based approach is of great importance in order to create and manage urban amenities and to control inadequate urban development which degrades landscape. Objectives of institutional and legal system are as follows:

- To prohibit private activities which degrade quality of urban amenities
- To guide and encourage private activities to create and maintain urban amenities
- To make coordination between public and private sectors and maximize the effect of public investment for urban amenities

(b) Examples of Institutional and Legal System for Urban Amenity

The followings are examples of institutional and legal system which can be applied for UB City related to creation and management of urban amenities and landscaping. The system can be incorporated into Special Policy-based Districts proposed in Chapter 6.

Figure 11.4.2 Landscape Characteristics in Ulaanbaatar City



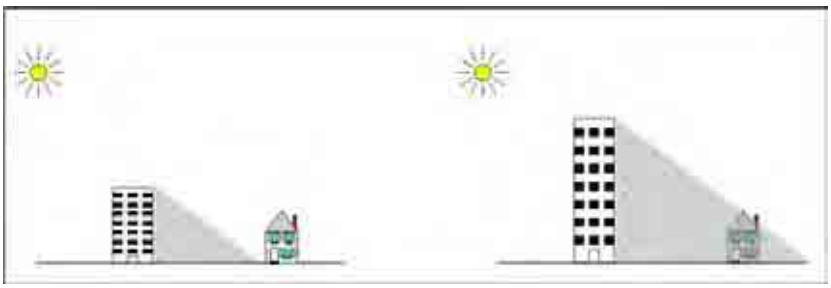
Source: JICA Study Team

i) Building Height Regulations

Building height regulations contributes to not only controlling development size, but also to creating beautiful landscape. The system can be applied for UB City especially in Beautification Promotion District. The regulation can be applied for the following purposes.

- Creating comfortable and healthy space by acquiring sufficient sunshine and ventilation (See Figure 11.4.3)
- Creating human-scale space and beautiful landscape with harmonious skyline
- Protecting views towards significant properties such as historical and cultural buildings and natural landscape (See Figure 11.4.4)

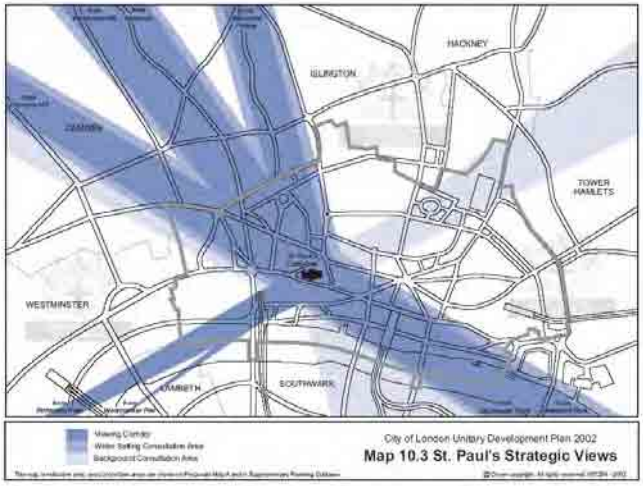
Figure 11.4.3 Building Height Restriction



Source: JICA Study Team

Figure 11.4.4 Example for Protection of Views towards Historical Building (St. Paul's & Monument Views, Corporation of London)

St. Paul's Height's Control Area



St. Paul's Strategic View Corridors

Source: St. Paul's & Monument Views, Supplementary Planning Guidelines, Unitary Development Plan 2002, Corporation of London

ii) Development of Design Guidelines

External appearance of surrounding buildings is one of the major elements to create landscape. Even if public spaces are well-designed, disharmonious external appearance severely degrades landscape quality. Therefore, design guidelines should be prepared to control building design especially in Beautification Promotion District. Regulation items include location of building walls, color code, greenery ratio in public open space, etc. Building height regulations can be also included in the design guidelines.

iii) Incentive System for Creation of Public Open Space

Private developers intend to effectively use land to maximize economic benefits under building regulations. Consequently, open space at ground floor level shall not be sufficiently created because Building Coverage Ratio (BCR) tends to be planned as the maximum under building codes. There is, therefore, an incentive system in Japan in which planning of open space at ground floor level provides developers with benefits such as relaxation of Floor Area Ratio (FAR) and building height regulations. The system encourages developers to create open space on the ground which can be open to the public. Figure 11.4.5 shows examples of public open space created by the system. This kind of a system can be applied for UB City especially in High-rise and Highly Intensive Landuse Promotion District to develop well-connected public open space.

Figure 11.4.5 Public Open Space Created by Incentive System in Japan

Source & Copyright: City of Nagoya, Japan

d) Control System of Street Billboards

Control system of street billboards can be useful in specific areas, the regulation items include size, color, location, etc. This system can be applied especially in Beatification Promotion District and Historical and Cultural Area Conservation District.

7) Example of Urban Amenity Enhancement Projects in coordination with Private Sectors

Landscape consists of various visible elements including buildings, public open spaces, mountains, rivers and human activities. Therefore, even if the design of individual buildings is excellent, it does not mean that it can create beautiful landscape. Therefore, it is of great importance to develop well-designed public spaces which spatially connect surrounding buildings. For this purpose, the public sector needs to aggressively implement beautification projects for public spaces. Beautification projects include re-designing of harmonious pavement and street furniture, underground burial of utility cables, etc. Underground burial of electric cables, pipelines, etc. can be applied in Beautification Promotion District. Importantly, beautification projects need to be coordinated with private activities based on the regulation approaches above.

11.5 Urban Disaster Management

The following disasters are listed as major disasters in UB City. (a) flooding (b) earthquake, and (c) Fire accident, wild fire. Particularly flooding is identified as the most critical issue. Recently heavy rain over-flowed dikes in Songinokhairkhan, Bayangol, Chingeltei, Bayanzurkh, Bagakhangai districts. The economic loss was calculated as over Tg. 800 million.

Major problems to accrue the flooding damage are:

(a) **Illegal occupation in flood prone area:** Though UB City has designated the flood prone area, there still live a large numbers of residents occupying the area where UB City has warned the residents of the relocation; however, most of the residents have not agreed because the relocation site has been offered as is stated in the national constitution.

(b) **Degraded water discharge channels and pipes:** There has been a plan to improve and extend water discharge channels and pipes; however lack of budget has caused the plan to stagnate. In addition, some planned areas have undergone privatization; therefore it has been difficult to implement such a plan.

(c) **Deforestation and desertification:** Deforestation and desertification have caused degradation of water-retaining capacity on mountains/forests, and as a result, the risk of flooding has increased.

A basic concept on disaster management as well as flooding control is as shown in the following steps: (1) Pre-caution, damage prediction, (2) Mitigation of damage and rescue of victims in a time of disaster, and (3) Emergency restoration and its support

In order to achieve appropriate management, “Physical Approach” such as construction of physical disaster preventive structures is not enough. Also “Institutional Approach” and “Financial Approach” are important.

Table 11.5.1 describes recommended actions for flooding control dividing into the three (3) approaches. It is identified that relocation of the residents in the flood prone area is an urgent issue as well as rehabilitation of drainage canals. For solving this issue, needless to say, provision of adequate relocation site is important. Moreover, development of monitoring and inspection system against illegal occupation (institutional approach) and financial support for low-income people to access adequate housing (financial approach) are also very important.

Table 11.5.1 Recommended Action on Flooding Control

Type of Approach	Disaster Management Measure
Physical Approach	• To construct and/or rehabilitate water discharge cannel and pipe • To construct dyke/bank • To vegetate or afforest on slope • To construct underground reservoir • To construct amenity zone with function of flood control • To construct permeable pavement for improving groundwater recharge
Institutional Approach	• To control illegal residents and development in flooding zone • To strengthen monitoring network against illegal tree cutting • To establish a flood forecasting and warning system
Social Approach	• To control illegal waste dumping in discharge canal/pipe • To establish community network for mutual cooperation • To establish emergency restoration system including financial assistance for disaster victim

Source: JICA Study Team

12 INSTITUTIONAL DEVELOPMENT OF URBAN PLANNING

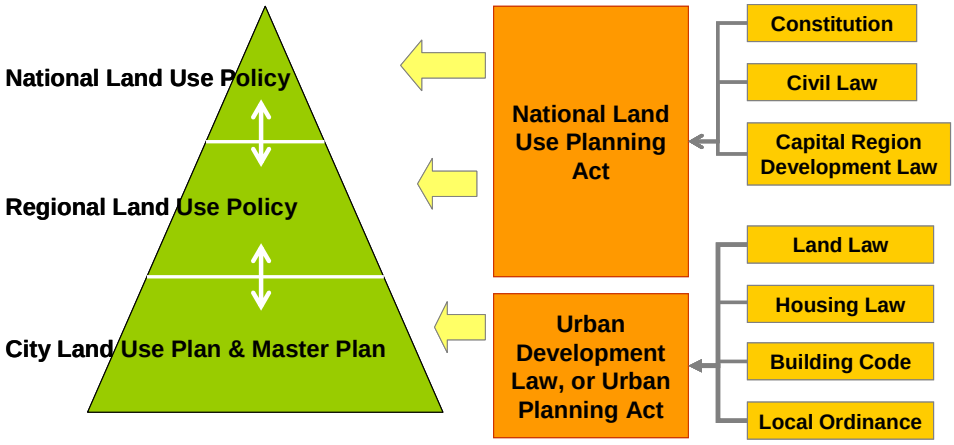
12.1 Overall Legal System of Urban Planning

1) Overall Structure of National Land Use Planning System

A national land use planning system needs to be formulated on a legal basis as a tool to realize three (3) definite objectives: (a) to use land appropriately over the nation; (b) to balance socio-economic development and environment over the nation; and (c) to manage resources on a sustainable basis over the nation. In such a national land use system, an urban planning system needs to be directly linked with and/or coherent with the authorized upper level of plans/polices such as national plan or regional plan. A well-functioning land use management system with legal enforcement on usage of land, rivers and water surface is necessary to be developed in order to properly manage land use over the nation.[1]

Figure 12.1.1 shows a conceptual scheme of the overall land use planning administration. It is proposed that national and regional land use plans should be formulated and legally authorized by a "National Land Use Planning Act" which is coordinated with the nation's upper laws such as the Constitution, Civil Law and Capital Region Development Laws. At the city level, the city master plan should address the land use policies which are coherent with the upper plans, and the city master plan should be authorized under the Urban Development Law (existing) or an Urban Planning Act (proposed). This legal framework should be coherent with relevant laws such as Land Law, Housing Law, Building Code and other local ordinances.

Figure 12.1.1 Overall Structure of Land Use Planning System



Source: JICA Study Team

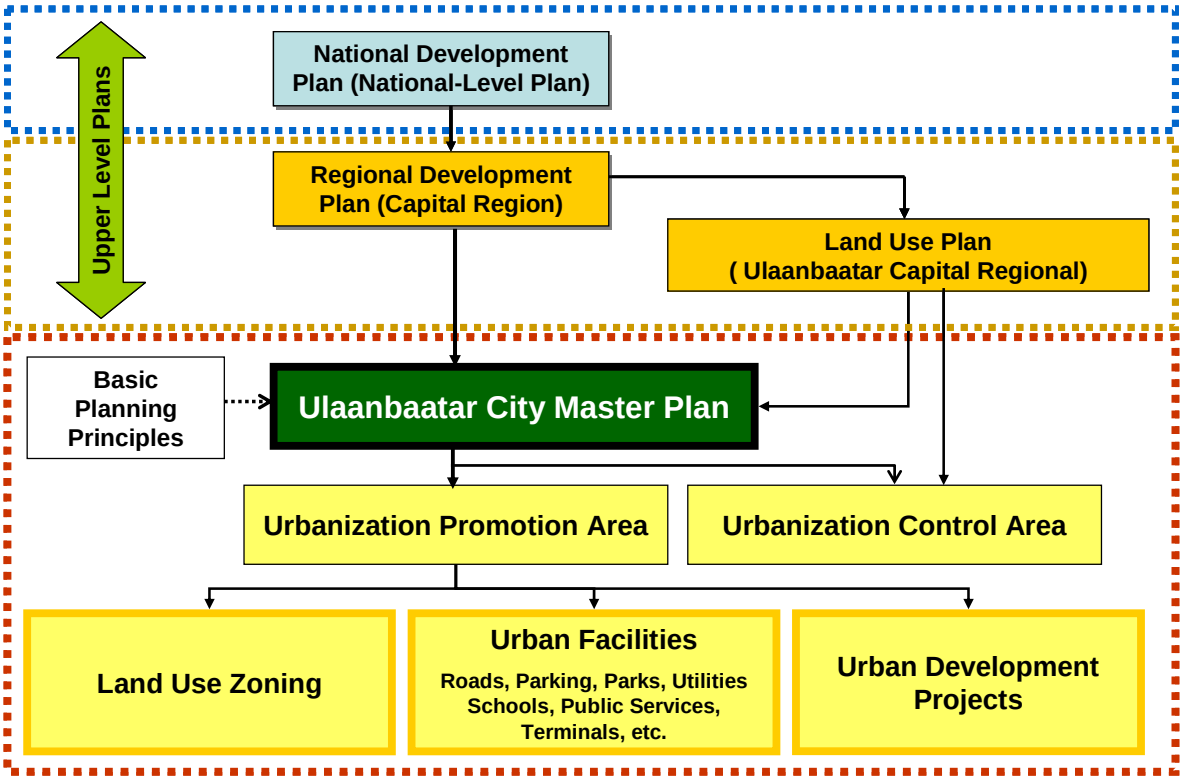
[1] Referring to the Japanese system, the land use planning system constitutes five (5) categorized land use areas under "***National Land Use and Land Management Act***": (a) Urban Area; (b) Agricultural Area; (c) Forest Area; (d) Natural Park Area; and (e) Natural Conservation Area. The designation of each categorized land use area is legally authorized by respective laws/acts. For instance, the natural park act is available for authorization of area boundaries, resource management and prohibited activities, so on.

2) Legal Framework for Urban Planning Administration (Proposed)

The urban planning administration formulates appropriate common rules, norms, guidance and incentives of development activities which may be shared by citizens and governments. Decisions in the process of "Urban Planning" should comply with legal rationales; therefore, major necessary decision and procedures need to be clearly stipulated in a part of laws and acts in the comprehensive legal system.

Figure 12.1.2 shows a proposed hierarchical structure of planning system and institutional relations of city master plan with upper level of plans such as National Development Plan and Regional (Capital Region) Development Plan. The City Master Plan is situated in such an overall structure.

Figure 12.1.2 Overall Structure of Planning System and City Master Plan



Source: JICA Study Team

(1) Upper Level Planning: National and Regional Plans

There are different types of upper level plans for an urban plan. Table 12.1.2 shows a list of these plans. These plans indicate future goals of development and protection of the country's resources, addressing approaches and methodologies to reach these goals. In Mongolia, neither national development law nor national land use planning law has legally been enacted. However, a basic concept of land classification in the Mongolian legal base is addressed in Article 10, the Land Law enacted in 1994, stipulating as follows:

> *The unified land territory shall be classified according to its primary purpose and needs for use such as:*
>
> *1. Agricultural Land;*

2. *Cities, Villages and Other Settlements Land;*
3. *Transportation and Network Land;*
4. *Forest Resources Land;*
5. *Water Resources Land;*
6. *Reserve Lands*.

This legislative concept on land classification should be in conformity with national and regional land use plans.

Special issue-focused upper level plans provide polices and orientation of national and regional development with some special purposes, delineating strategies and/or fundamental principles such as promotion of industry, decentralization and centralization of urban functions, resort area development, and so on. One of the most important upper level plans is natural conservation plan, including agricultural land development plans, forestry conservation plans, national park plans, etc.

Table 12.1.1 Legal System to Justify Upper Level Plans

Objectives	Laws to Justify the Implementation of Plans	Plans
National Development Plan: To set future development goals in the national level and to guide the national land use plan and related regulations	• National Development Act • National Land Use Act • National Parks Special Act	• National Development Plan • National Land Use Zoning Plans • Land Use Plans in Regional Level
Capital Region Development Plan: To guide the development of the Capital Metropolitan Area	Ulaanbaatar Metropolitan Area Development Act	Ulaanbaatar Metropolitan Area Development Plan
Aimag Development Plan: To guide rural development, based on each regional characteristics	Aimag Development Act	Aimag Development Plans
Natural Resource Conservation Plan: To conserve natural environment, including farm land, forestry, natural parks, and pasture land areas	Acts related to natural resources and environment: • Forestry Act • Natural Park Act • Natural Environment Conservation act	• National and regional Forestry Conservation Plans • National Park Development and Conservation Plan • Environmental Resource Management Plan
Special Issue-focused Plans: To promote special areas to be strategically considered with specific issues	• Declining Remote Area Development Act • Desertification Prevention Act • Mining Area Conservation & Land Management Act • Natural Resource Conservation Act	• Declining Remote Area Development Plans • Desertification Prevention Plans • Mining Area Conservation & Land Management Plans • Natural Resource Conservation Plans

Source: JICA Study Team

(2) Institutional Framework on City Master Plan

The city master plan's functions and objectives are defined by the existing Urban Development Law as follows: "*it shall aim to create comfortable living and working conditions for the population, determined development direction of towns and villages and planned to create ecologically and hygienically friendly conditions, and shall incorporate*

boundaries of towns and villages, territorial functional zoning, engineering, road, transportation and social infrastructural development, historical and cultural memorial structures and architecture-urban development requirements (Clause 12.4.1)"

It is proposed that the master plan indicate two distinctive areas to be designated in the jurisdiction of the city, that is, the ***urbanization promotion area*** and the ***urbanization control area***. The former includes areas which are already built-up and/or encourage urban orderly development activities in about ten (10) years in the future on a long-term perspective. While, the latter includes areas where urbanization and human settlements should be controlled or restricted with less public investments for infrastructure development in about ten (10) years at least from the urban environmental point of view. The urbanization control area usually holds the important function of open space, green area and environmentally precious areas such as watershed conservation which are all crucial elements of urban amenities and sustainability. This controlled area must be coherent with the upper level land use plan.

The boundary to segregate these two areas has a significant economic meaning: that is, land prices in the urbanization promotion area tend to be dominantly higher in the real estate market than those in the urbanization control area, simply because of the difference in commercial values of land use. Therefore, the boundary needs to be designated, based on scientific rationales, not political rationales.

As a reference, Table12.1.2 shows a Japanese case of the legal framework of area designation related to the city planning and land use management.

Table 12.1.2 Legal Framework of Area Designation (Japanese Case)

Categorized Areas	Areas to be Designated	Basic Law	Measures and Regulations on Land Management
City Planning Area	• Urbanization Promotion Area • Urbanization Control Area	City Planning Law	• Development Permission System • "Zoning System" for Land Use Regulations • Building Construction Permission System • Building Code
Agricultural Area	• Agricultural Promotion Area • Agricultural Land Use Promotion District (to be designated within Agricultural Promotion Area)	Agricultural Promotion Areas Law	• Conversion of agricultural land areas • Development Permission System in Agricultural Land Use Promotion District • Disclosure of Activities in Agricultural Promotion Area • Government subsidies and incentives for agricultural development activities in Agricultural Promotion Area.
Forest Area	• Forest Reservation Area • Designated Area by Regional Forest Plan (prepared by Regional Government)	Forest Law	• Permission system for logging and cutting of trees in Forest Reserve Area • Permission for forest cultivation with more than 1 ha even in private forest areas within the designated by Regional Forest Plan

Source: JICA Study Team

In the designated urbanization promotion area, three (3) basic planning aspects are discussed in the master plan: (a) Zoning System, (b) Development of Urban Facilities; and (c) Urban Development Projects.

(3) Zoning System in the Designated Urbanization Promotion Area

The designated Urbanization Promotion Area is subject to a “Zoning System”. The Zoning System aims to formulate a rational urbanization pattern allocating different urban functions in an orderly structure, taking into account attributes and characteristics of urban areas. The objectives of the Zoning System include:

- To avoid disorderly mixed locations with industries and residences
- To restrict environmentally conserved areas from irrational encroachment of development
- To coordinate provision of urban infrastructures with urbanization process
- To promote an effective and intensive land use in the economically valued areas such as central business district
- To promote urban service and commercial activities in the suitable areas
- To provide land areas available for a wide variety of public services and facilities in a planned manner.

Zone categories of “Zoning System” are an important planning issue. In principle, the zonal division with three (3) major zones should first be considered, that is, Housing, Commercial and Industrial. Then, several classifications may be given to each major zone, taking into account the urban planning objective.

The current Urban Development Law stipulates seven (7) categories of zones as follows (Article 13):

1. Residential and public zone
2. Industrial zone
3. Engineering network, road and transportation zone
4. Greenery area, recreational and tourism zone
5. Agricultural zone
6. Summer housing zone
7. Special purpose zone.

These zoning categories are thought to be so simple that more deliberate spatial characteristics of land use may not be needed to guide the urbanization process. Therefore, Study Team proposes a zoning system with further detailed zone categories as residential, commercial, industrial and greenery land uses, as shown in Table 12.1..

In addition, another zoning system of “Special Policy-based Districts” is proposed to be designated, and incorporated into the Zoning System. This system aims to promote appropriate land use with special purposes to enhance urban functions. Five (5) special zones are proposed, as shown in **Table 12.1.**. It is noted that this policy-based zoning is applied for the policy implementation such as: (a) Land use intensification policy in Central Business District (CBD); (b) Beatification policy of landscape; (c) Environmental

conservation and the historical and cultural assets protection; (d) Car parking management in CBD; and (e) New town development to induce special international business functions related to the New Ulaanbaatar International Airport. Some strategic urban development project areas may also be designated in this system.

Application of the proposed zoning system and another policy-based zoning system for Ulaanbaatar City is discussed in Section 6.4.

Table 12.1.3 A Proposed Model of Zoning System

Major Land Use	Zoning System in Mongolian Urban Development Law (Amended in 2008)	Proposed System	
		Zoning Category	Vision and Objective
Residential	Residential Housing and Public Zone	Low Density and Low-rise Housing Zone	To develop housing areas with good environment and open space at low density.
		Housing & Public Mix Zone	To improve housing environment in association with a wide variety of urban services and commercial activities.
		High Density and High-rise Housing Zone	To develop intensive housing areas with middle- and high-rise housing buildings and spacious open space.
Commercial and Public		Neighborhood Commercial Zone	To activate a variety of commercial, business and service activities for neighborhood communities
		Commercial & Business Zone	To be intensively developed as pivotal commercial and business centers / sub-centers with a variety of high-level urban service functions.
Industrial	Industrial Zone	Industrial and Housing Mix Zone	To accommodate a variety of small and medium-scale industrial and service activities, including manufacturing, warehouses, goods distribution facilities, workshops, so on. Land use changes to housing areas may be allowed, given environmental improvement measures.
		Exclusive Industrial Zone	To accommodate exclusively large-scale industries and utility plants with well-functioning infrastructures to support such production activities.
Green	Greenery Area, Recreation and Tourism Zone	Green, Open Space & Preservation Zone	To be protected from any kind of land development for housing, commercial & industrial activities. No buildings with other than public purposes are allowed.
		Park, Recreation and Tourism Zone	To be developed as parks and landscape areas for citizens' recreation and tourism. No buildings with other than public purposes are allowed.
Others	Agricultural Zone	Agricultural Zone	To promote agricultural activities to supply fresh vegetables to city markets.
	Special-purpose Zone	Special-purpose Zone	To be conserved as Public Graves, Military-purpose Facilities and others
	Engineering Network, Road and Transportation Zone	Utility Zone	Factories/plants for utilities and engineering facilities are involved in "Exclusive Industrial Zone"
	Summer Housing zone	Environmental Conservation Zone	To be well-managed in human settlements, minimizing negative impacts on environmental conditions
	-	Water Preservation Area	To be strictly conserved for watershed conservation
	-	New Town Development Zone	To be developed as "new towns" driven by Public-Private Partnership (PPP) integrated with special urban functions such high education, Knowledge-based industries, R & D, commercial and business and recreational functions, given full considerations of energy-saving utility systems.

Source: JICA Study Team

Table 12.1.4 Special Policy-based Zones Applicable for Ulaanbaatar City

Special Policy-based District		Objectives
1	**High-rise and Highly Intensive Landuse Promotion Zone**	To develop and/or redevelop the CBD with intensive accumulation of business, commercial and service functions so that Ulaanbaatar City will become a competitive World City.
2	**Beatification Promotion Zone**	To improve and revitalize historical buildings and urban amenities.
3	**Historical and Cultural Area Conservation Zone**	To conserve the assets and heritages for tourism development as well as for citizens.
4	**Parking Space Capacity Enhancement Zone**	To develop parking lots/space with a special emphasis, involving private sector's participation and traffic management measures.
5	**Airport City Development Zone**	To designate the project area for development of the Airport City in the adjacent to the NUIA.

Source: JICA Study Team

(4) Development of Urban Facilities

Urban facilities to be planned in the master plan and authorized by the government should be defined in the Urban Development Law or Urban Planning Act. The master plan should also address transportation systems, including roads, railways and air, and infrastructures and utility facilities such as electric power supply, water supply, sewerage system, heating system and solid waste management system are important facilities to be planned in the master plan. Development plans of green space and parks, social services such as educational and health related facilities and housing development strategies.

(5) Urban Redevelopment Projects

A number of decrepit and aging apartment buildings which were constructed in the Socialism Era are awaiting improvement or renewal. Most of such apartment units have been privatized, since a communal system to effectively renew those apartment buildings with replacement of utility systems is not available yet. In many cases, the ground floors are used for shops, restaurants and services along main roads. This makes the redevelopment of the buildings more difficult in reaching a consensus among the residents.

Renewal, redevelopment and/or re-building, whatever the form may be, should be executed as an ***urban redevelopment project*** which is authorized and committed to by the Central and Local Governments under the Urban Development Act. The project aims to develop the designated area in association with not only new housing buildings, but also new roads, parking lots, green and park and other needed public services. This project should be basically executed in a self-financing scheme, but government subsidy may be incorporated into the project to a rational extent.

The Japanese system, called "***Urban Redevelopment Act***" is a good reference. However, the Land-to-Floor Space Equivalent Exchange System, which is the basis underlying the Urban Redevelopment Act, is too sophisticated to be applied for this locality in Ulaanbaatar. A more unique mechanism suitable for the local reality of Ulaanbaatar City needs to be developed.

Another urban development project to be authorized is ***Ger Area Improvement Project***. Ulaanbaatar City residents are legally eligible to register their own land for housing with not more than 700 m^2 per head under the revised "Law on Allocation of Land to Mongolian Citizens for Ownership". This legalization process has been proceeding throughout the so-called *Ger* areas without sufficient infrastructure and adequate sanitary systems. This has caused serious urban environmental problems.

The Land Readjustment (LR) System, which is popular and has been widely implemented in Japan, may be a good reference for a Mongolian system to this end. However, 100% copying of the system is not recommended, because LR system needs capable organizers or facilitators with professional knowledge and skill to coordinate all stakeholders with different concerns and interests. Such a sophisticated mechanism will not be practical in reality. Important is the underlying concept of LR system, that is:

- Land area to be used for new roads, infrastructure and other public services and another land area to be reserved for sale to make money for the project shall be borne by a fair and rational reduction/contribution of the project site area.
- Asset values and endowments of stakeholders concerned shall be the same before and after the project.

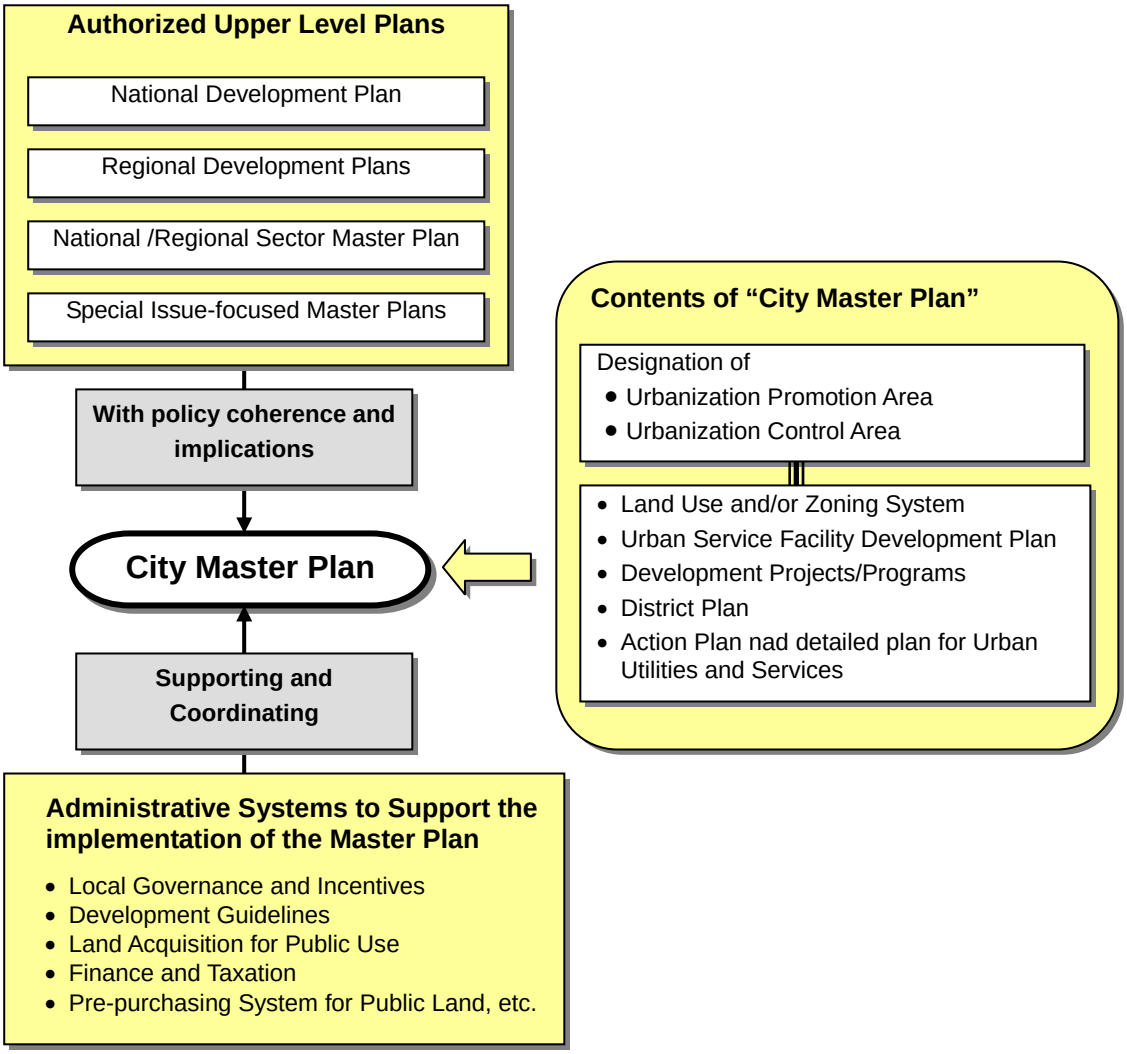
3) Administrative and Institutional Systems to Support Urban Planning

The master plan is not merely a drawing of citizens' dreams, but guidelines of development activities to be rendered by private sector as well as the public sector. Several institutional tools are necessary to support the materialization of the master plan. Otherwise the plan could not be workable as expected. In order to encourage a certain activity, provision of incentives such as tax reduction and/or subsidies can be effective. On the other hand, if a certain activity needs to be controlled, tax/charge imposition and/or legal punishment may be effective to restrict it. Thus, some enforcement power should be attached to the master plan. The following are institutional systems indispensable for supporting the implementation of the master plan:

- ***Development guidelines*** for housing area development by the private sector, regulating infrastructure provision and open/green space and sanitary conditions.
- ***Land expropriation for public uses*** such as roads, public services such as schools and hospitals and other uses that directly benefit the general public, not particular individuals.
- ***Rational user charge system*** for receipt of public services and use of public utilities.
- ***Tax incentives and subsidies*** for relocation and/or move of settlements of families that reside in risky areas of flooding and landslides.
- ***Land pre-purchasing system*** for Ulaanbaatar City to reserve the land area that will be needed for public service provision in the near future.

Figure 12.1.3 shows the overall institutional structure of city master plan, summarizing all the discussion above.

Figure 12.1.3 Overall Institutional Structure of City Master Plan



12.2 Legislative Integration for Urban Planning and Development Management

1) Coordination and Integration of Three (3) Relevant Laws

Since 2002, the Government of Mongolia has been building the legal basis for urban development and land management; however, the entire legal framework is still so weak that it does not cover the necessary administration for the urban growth management. Major legal systems related to urban planning are available in three (3) laws; Urban Development Law, Housing Law and Land Law. These three (3) laws should be mutually coherent and integrated with each other, as conceptually illustrated in Figure 12.2.1.

Figure 12.2.1 Legal Integration with Three (3) Urban Planning-related Laws

Source: JICA Study Team

New regulations and/or guidelines need to be newly issued to meet the requirements of urban development and Ger area improvement. The following viewpoints need to be employed to enhance their legal functions in general:

- To review Urban Development Law as a tool of development "control" and "promotion", addressing and stipulating:
  - Legal functions of "Master Plan" and Governments responsibilities to implement the master plan
  - Zoning System and its management mechanism
  - Rules and regulations of development activities by the private sector
  - Implementation mechanism of Urban Development Projects

- To review Housing Law for establishment of “Social Housing Corporation” and enlargement of “Housing Development Fund” in association with:
  - Housing Guidelines and Standards
  - Functionalization and management of Housing Development Fund
- To review “Land Law” and “Law on Allocation of Land to Mongolian Citizens for Ownership” for appropriate land management and land value assessment system, based on rationalization of:
  - Land Registration System
  - Newly Amended Ownership Allowance: 700 m^2/HH to 700 m^2/prs
  - Land Use Permission.
- To build new laws to guide deliberate urban development and Ger area improvement through:
  - Land Readjustment Law
  - Urban Redevelopment Law
  - New Town Development Law
  - Land Compulsory Expropriation Law.

2) Enhancement of the Urban Development Law

(1) Amended Urban Development Law

Although Law of Urban Development was enacted in 1988, this law has not been effectively enforced in a proper legal environment to regulate urban development issues under the market-driven economy. Therefore, the Laws of Urban Development was amended and approved by the Parliament in June 2008. The amended law is expected to provide a legal tool for effective management in urban development as well as land use in urban areas. Major articles newly stipulated in the amended law are:

- Roles and responsibilities of the Governor/mayor and the chief architect in master planning
- Zoning system;
- Participation in planning process of the general public and informing to the public
- Creating infrastructures for disabled persons
- Rights and duties of economic entities and organizations to implement urban development activities

Among the amended law, “Zoning System” in the master plan is particularly noted, and this policy is incorporate into the articles 13 and 14, addressing the legal objectives and responsibilities of the master plans and approval procedures of urban development plans and projects and documentation of the master plan and related plans, etc. Out of these articles, the most important is the Zoning System which shall enforce citizens to make land use appropriate and manage housing and facility development. Although this system needs to be inherently associated with administrative enforcement and monitoring, any effective and concrete measures on these aspects were not stipulated yet.

(2) Sub-regulations and Administrative Procedures for Execution of the Urban Development Law

Sub-procedures, rules of administrative operation, enforcement regulations and ordinances have not been definitely established under the Law yet, and these issues are still in the process of formulation, employing professional research and discussions: namely, “Codes and Criteria for Zoning System”, “Basic Planning Process for City Master Plans”, “Integrated Standards and Formats for Urban Development Documents”, “Guidelines for City Design and Landscape”, “Ger Area Redevelopment Planning” and other related-regulations in order to establish appropriate legal environment to conduct important issues of urban development and administrative interventions on the construction sector.

Such an integrated regulatory framework is crucial for building modern Mongolian cities, and needs to be explored to be suitable for the uniqueness of this country, based on professional advice from advanced countries experiences.

Another important legal aspect is to regulate some physical and spatial limits for buildings and land use with respect to designated zones. This regulation is to determine the environmental quality and the economic efficiency of landuse, and popular in many advanced countries. Useful indicators to be regulated are as follows:

- Floor Area Ratio (FAR = total floor area of the building/land area);
- Building Coverage Ratio (BCR = building area/land area);
- Building Height Limit; and/or
- Building Set-back (requirement of distance from the right of way to the building surface line)

3) Legal System to Realize Housing Policies

The Housing Law of Mongolia regulates the aspects of planning and designing housing facilities as vital requirements for inhabitants, the matters of setting up “Housing Development Fund (HDF)”, the rules of their spending and the topic of maintenance of apartments.

The Central Government has enacted a few basic regulations related to housing and apartment development as described in “Housing Privatization Law” and “Law on the Property of Shared-ownership of Residential Buildings and Legal Status of the Condominium Association”. However, many relevant laws and regulations still have to be established or amended to adapt to the current socio-economic conditions.

It is expected to establish new public institutions for housing finance and development in order to assist improvement of vulnerable people’s housing. Especially, the following legalizations need to be examined in the working group among MRTCUD, UB City and other agencies concerned:

- Law on Housing Development Financing Institution (HDFI)
- Law on Community Organizations Development Institute (CODI)
- Law on Social Housing Corporation (SHC)

The financial resources of “Housing Development Fund (HDF)” stipulated in the Housing

Law is not sufficient to meet present housing needs, and new financial resources have to be incorporated into HDF. The following resources are expected to be introduced for housing finance and development with necessary legal amendment for this financial arrangement.

- Mongolian Development Fund
- National Pension Fund
- Housing Development Mutual Fund

4) Legalization of Development-Related Laws

Mongolia has the following major laws besides Urban Development Law and Housing Law which relates to the land and housing development.

- Construction Law
- Land Law and Law on Land Ownership Allocation
- Environmental Protection Law / Environmental Impact Assessment Law

"**Construction Law**" regulates all aspects of construction activities, engineering drawings, activities related to development of construction material industry, the norms and standards of construction works, and the normative technology criteria. It prescribes the rules of maintenance of construction sites and of technical supervision and safety of the compounds. However, at present, the Construction Law is not applied to the Ger areas. Therefore, some measures to control construction and urban development activities in those areas have to be introduced.

"**Law of Allocation of Land to Mongolian Citizens for Ownership**" was enacted in June 2002, and this is an epoch-making law in the Mongolian history. Article 4 addresses "The Purpose of Land Allocated to Citizens for Ownership", and mentions that land shall be allocated to citizens for the three (3) purposes: families' needs, agricultural needs and other needs. The Land Law, enacted in 1994, stipulates the extent of land tenures such as "ownership", "possession" and "use rights of land". The land ownership of Mongolian people was approved in 2002 by the "Law of Allocation of land to Mongolian Citizens for Ownership". More uniquely, there is a land fee decision system for the land possessing and use by "Law of Mongolia on Land Fee", and there is no land value assessment system. The land value assessment is an essential element to facilitate market-driven urban development so that growth and land use management system can function well with the urban development law and land use regulations; thus, a rational system has to be introduced. Another planning issue is that the newly amended land ownership allowance from 700 m^2 per household to 700 m^2 per capita in 2008 will affect the efficiency of housing land use and make the improvement of Ger areas difficult. As it is obvious that within the current urban area, no sufficient land remains to respond to requirements under the new allowance of land ownership, urbanization will tend to be expanded outward, thereby leading to an inefficient urban structure against the concept of "Compact City."

"**Environmental Protection Law**" and "**Environmental Assessment Law**" prescribe basic policies for preserving the urban and natural environment and technical standards for the environment impact assessment. These laws have to be operated together with the urban

growth management, and the surveillance system has to be reviewed.

5) New Legal Framework for Urban Planning Projects

The existing legal systems of Mongolia are very limited for facilitation of deliberated land, housing and commercial development projects which have been planned in the Master Plan. The absence of such a legal framework for the project implementation is one of the major obstacles to promote projects in a proper manner by private investors.

The regulatory framework for the development projects should be established: for instance, “Land Readjustment Law”, “Urban Redevelopment Law”, and “New Town Development Law”. Table 12.2.1 shows the expected legal framework to be further studied for land and housing development, taking into account the financial burden of public sector, acceleration of the private participation in public services, creation of the new financial resources and improvement of the investment environment of private sector.

Table 12.2.1 Legal Framework to be studied for Land and Housing Development

Legal Framework	Existing Legal System	New Legal System	Legal Objectives
Law for city planning and development	Urban Development Law	To be Revised	Effective use of private sectors for land and housing development, by introducing a new city planning system such as strict zoning, growth management, legal district plan, urban facilities, and new development permit system
Law for Land Development	-	Community Development Networking System	Introduction of land and Infrastructure development system which is simple and easy to understand for citizens, and no requirement of heavy financial burden of public sector
		Land Readjustment Law	
		New Town Development Law	Large-scale supply of housing and working place by enabling land compulsory expropriation or purchase in advance
		Land Compulsory Expropriation Law	To vest public sector with land compulsory expropriation rights inside the boundary of the authorized city planning projects
Law for Housing Development	Housing Law	To be revised	Enhancement of financial resources and establishment of implementation body for affordable housing for low income class people
Law for Urban Redevelopment	-	Urban Redevelopment Law	Enhancement of financial resources and establishment of implementation body for affordable housings for low cost income class people
Law for Land Ownership	Land Law; Law of Allocation of Land to Mongolian Citizens for Ownership	To be revised	Improvement of investment environment of foreign investors in terms of the limited land use rights, and introduction of declared land value system

Source: JICA Study Team

12.3 Institutional Guidelines for Urban Development Activities and Projects

1) General Guidelines for Housing Area Development

UB City presently is confronting financial difficulty in provision of public services and infrastructure because of rapid urban development in the central and also rapid, huge influx of population into Ger areas spreading out over the urbanization fringe. These areas are not provided with adequate infrastructure and public services. It is obvious that the governmental financial capacity of UB City alone cannot provide necessary infrastructure and public facilities to the newly urbanized areas.

There is an idea to introduce development guidelines to create better, healthy urban development to be initiated by the private sector. The development guidelines provide certain design standards for developments for the purpose of the creation of good, healthy living environment with well-planned land use and orderly formation of urbanized area in cooperation with developers.

In the development of public facilities, responsibilities and roles to develop public facilities should be determined among the government, the developer, and the land owners based on the design standard stipulated in the guideline. To this end, in addition to the design standard, development finance is also needed, which is called “development financial cooperation” from the developers. It is appropriated to development of infrastructure and public facilities like roads, parks, water, power, heating, etc. In financing for development of infrastructure and public facilities, the responsibilities and roles among the government, the developer, and the land owners should be demarcated clearly.

Basically, the developers and land owners will bear the financial burden within the value increase of their property accrued from the development.

Box: Japan’s experience of rapid urbanization and establishment of guidelines

Japan experienced rapid urbanization in ’60s and ’70s. In those days, local municipal governments suffered from increasing demand for public services (water supply, schools, parks, etc.) for immigrants. Almost half municipal governments established a self-defense development guideline to control development, starting with Kawasaki city in 1960.

According to the survey[2] the Ministry of Land, Infrastructure, Transport, and Tourism (MLIT) of Japan, there are almost half municipalities having guidelines (1,658 of 3,247 municipal governments as of 2003) to avoid disorderly development and short-supply of public service to the newcomers in their territory. These guidelines have been established as follows:

Purpose

- To provide good living environment (94% of 1658 municipalities in 2003)
- To prevent over-sprawling development (77%)
- To lessen financial burden based on beneficiary-pay-principle (10%)

Items Requested

[2] Source: MLIT (Ministry of Land, Infrastructure, Transport and Tourism) of Japan
http://www.soumu.go.jp/s-news/2003/030304_3.html
http://www.soumu.go.jp/s-news/2003/pdf/030304_3_01.pdf

- Minimum road width (around 60%)
- Minimum requirement open space (park) (around 60%)
- Provision of land for firefighting facilities, waste management facilities, community halls, schools, etc. (around 10%~20%)
- Money donation for public facility development (around 20%)

Deign standards often described in the guideline

- Road (minimum width, feeder road, approach to major road, etc.)
- Park (minimum area per person, or per development by the size of area)
- Educational facility (school land)
- Community facility

2) Guidelines for Facilitation of Urban Development Projects

In Mongolia, there is no legal system for promoting urban development projects. Various problems in the ongoing projects are observed because of lack of control mechanism for the project in PMU. The delay of “40,000 Housing Units Program” is a case of such problems which are mainly caused by lack of legal and institutional systems. The government has been making many urban development drawings for the projects but the government has no planning and implementation system in the context of the legal and institutional procedure. The introduction of such a system is vitally important for improvement of living environment.

Four (4) major urban development systems are recommended: (a) Land Readjustment, (b) Urban Redevelopment, (c) New Town Development and (d) Community Development. The former three (3) urban development systems are legalized in developed countries, but the last one is not legalized as one of the urban development laws. However, it is important to prepare a guideline for the community development in the city planning system. These four urban development systems should be authorized by national legislation and detailed regulations for their implementation should be put into law as local ordinances of Ulaanbaatar City.

(1) Guidelines for “Land Readjustment Project”

This system will be applied to the Ger areas for the improvement of living environment. In this case, it is important to combine the community development system with land adjustment in the initial stage. The identification of dwellers shared territorial assets and development themes affects the direction of land readjustment scheme. As there are few public facilities such as schools and parks in Ger area, the size of the land readjustment project is desired to be more than the traditional neighborhood unit.

The Urban Development Resource Center (UDRC) already has good experience in “Housing Finance Project” of ADB implemented at Dari-Ekh, which took a very similar system to land readjustment, and was promoted by formulating CBOs and savings groups. Some government officials and university researchers participated in JICA’s training course for the land readjustment system, so these human resources should be utilized for the promotion of the project. The implementation body of the land readjustment may be a private land readjustment association comprised of dwellers and private developers approved as participatory association members. This association is qualified as a legally

authorized corporation which is responsible for project implementation including the finance.

An appropriate mechanism of property value assessment is a key to make this type of project implementable. However, there is no objective land valuation system in Mongolia, and the land pricing system based on the market price has not to be officially introduced for the land asset transactions. Technical assistance is required for the appraisal system for different types of land tenures such as ownership, possession and rights of use.

(2) Guidelines for "Urban Redevelopment Project"

The old ramshackle apartment areas along Peace Avenue, etc., were built during the socialist regime, and several areas inside CBD have to be redeveloped by using a system for promoting efficient land use, enhancing the existing urban functions of CBD, and providing arterial and sub-arterial roads for mitigating the traffic jams. There are two (2) types of urban redevelopment schemes: (a) Asset & Title Exchange System and (b) Entire Building & Land Purchasing System. In the case to develop a public road within the site, the land readjustment project will be combined with the redevelopment project.

The implementation body of a redevelopment project may be a private redevelopment association comprised of dwellers, land and building owners, and the private developers to be approved as participatory association members, etc., or the private redevelopment company itself.

At the initial stage of implementation planning at the latest, it's needed to identify the powerful private developers and make prospects for the implementation, by which the association can dispose of the reserved floor areas by sale. The redevelopment of apartment houses is not profitable in many cases, and so the government has to lead the project by providing some incentives and subsidies at a rational level.

(3) Guideline for "New Town Development"

New town sites are already proposed in "40,000 Housing Units Program". These sites are located at the periphery of the existing urban area, but there are few public facilities such as schools, green parks and infrastructure. Therefore, it is necessary to review the site boundary and project size in the context of the neighborhood unit, where the appropriate public facilities supported by the population of neighborhood unit (10,000 people) are provided. In the new towns, various types of houses for high, middle and low income groups have to be developed, although the "40,000 Housing Unit Program" does not specify the classification of housing demand side, and the existing master plan for the new town development should be reviewed from this viewpoint. The appropriate implementation body also has to be identified in compliance with the reviewed master plan.

The proposed new town sites are not connected with CBD by arterial road and public transportation systems. Since it is very costly to provide these basic infrastructures, the integrated planning system of working and living place has been adopted in Singapore and Malaysia as well as UK, for reducing the financial burden of the government. The proposed new town master plan focuses only on the housing, but this type of integrated planning system should be incorporated for solving the traffic problems.

(4) Guideline for Community Development

The community development system will be mainly applied for the middle and remote Ger area where poor people live and there is no distinct urban development potential. As mentioned above, the identification of shared territorial bonds and development themes come first, and the dwellers are divided into small community units. The reform of dwellers community consciousness will be flexibly promoted, and CBOs and savings group will be formed.

In Ulaanbaatar city, seven CBOs were formed by the assistance of NGOs, and the community development has been promoted as of June 2008. NGO's activities will be needed to enhance the improvement of Ger areas. A CBOs Cooperative Association will be the implementation body for the community development. This cooperative association will be organized with dwellers and stakeholders in the community development. The participation of the private sector into the cooperative association depends on the development potential of the site. Table 12.4.1 summarizes major topics and planning items which should be compiled in the guidelines for "Community Development System.

12.4 Relevant Institutions on Land Value Assessment

At present, development projects approved by the city government have not shown good progress because of lack of appropriate land valuation system.

According to Appendix to Order #136 of then MCUD issued on August 21, 2007, entitled "Methodology for determining the Auction Initial Price for Land Ownership and Utilization Right," auction land price in UB City was determined based on the base price of 8,800 Tg/m^2 for settlement area by the use of coefficients.

Depending on the conditions of the evaluation zoning of the land to be issued for ownership or utilization and the type of tenure, the corresponding ratios should be selected from Table 12.4.1.

Table 12.4.1 Correction ratio of Land Auction Price

Type of Land Use	The correction ratio depending on the land owning and use and land evaluation zoning					The correction ratio for project selection
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	
1 For residential housing	0.2	0.18	0.15	0.12	0.1	1.0
2 All types of services	1.5	1.2	1.0	0.8	0.7	3.0
3 Industrial, other than Agricultural, purpose	1.5	1.2	1.0	0.8	0.7	3.0
4 For Agriculture	0.5	0.4	0.3	0.2	0.1	1.5
5 For storage and distribution station of oil and gas	3.0	2.7	2.5	2.3	2.0	

Source: Appendix to Order #136, Minister of Ministry of Construction and Urban Development, August 21 2007, titled "Methodology for determining the auction initial price for Land ownership and utilization right

However, this system does not reflect the actual market price of land. For example, in case of the 7th Khoroolol, so far one of the developers has negotiated with 92 households and the maximum price is 47 mil Tg/Khassha; in case of Radio-TV area development, the highest price is 150 million Tg./Khassha +2 houses; If the land size is 700 m^2, the land price is equivalent to more than 70,000 Tg./m^2.

In the NADEP pilot projects at Dambadarjaa and Unur described in Chapter 9, the Study Team has proposed a simplified Land Valuation System based on the location of land lots and their access to the roads they face. The land pricing system is derived from the example of Japan's land value assessment system, as described below.

More appropriate land value system applicable to the real situation in UB City should be studied in cooperation with the GTZ's cadastral and land valuation project.

Box: Example of Land Price in Ulaanbaatar City

Ulaanbaatar has five (5) land evaluation zones and to calculate the Auction initial price, project selection for 700 m^2 of land in zone 2, which will be used for constructing the apartment house with service outlets in basement floor, is used.

(a) In this case Ulaanbaatar, base price for 1m^2 of land is 8,800 Tg

(b) When we select the ratio according to *Table 12.4.1* and once the basement floor will be used as service outlets the corresponding ratio in Zone 2 is 1.2.

(c) The minimum price of 1 m^2 of land is to be used:

8,800 tug/m^2 x 1.2 = 10,560 Tg/m^2

(d) f we will issue this land using Project selection principle, we will select the ratio 3.0 from the last column of *Table 12.4.1* and to correct the base price, we will multiply by total land area:

8,800 tug/m^2 x 3.0 = 26,400 Tg/m^2

→ 18,480,000 Tg/700 m^2

(e) Adding the costs related to technical condition, auction preparation and organizing to the above calculated minimum price, we get the Auction initial price for land ownership and use rights.

Box: Actual Difficulties in Housing Development

Case 1: 14th Khoroolol Development – problem of exchange of land with apartment

Successful exchange of the old apartment and new apartment

The first phase of the 14th Khoroolol development, those who lived there are going to exchange their old, dilapidated one-story row-house apartment built in 1956 without sufficient infrastructure to new apartments with infrastructure.

The exchange of the property from old apartments to new apartments has been done on a floor-to-floor basis keeping the same floor area. This means they are satisfied with the benefit they received from the development using the floor area of apartment they live in now. 18 households, 9 households with 60.2m^2, and the other 9 households with 47 m^2 of apartment floor area, on a 8,550 m^2 of land are going to move to new apartments. On the land, six (6) buildings from 5 to 9 stories of apartment buildings of 372 apartment units are being constructed.

Unsuccessful exchange of land and new apartment floor

The developer has offered the dwellers in the 14th Khoroolol certain area of apartment for their land: for example, 15m^2 of land area = 1 m^2 of area of apartment house (in this case, 700 m^2 of land will be equivalent to 42 m^2 of apartment).

The exchange has not been successful yet because of the price hike of the land purchase amount.

Case 2: 7th Khoroolol Development – Top-down approach

Detailed plans approved by the government are made mostly in a top-down or government-led manner. The 7th Khoroolol case shows this clearly.

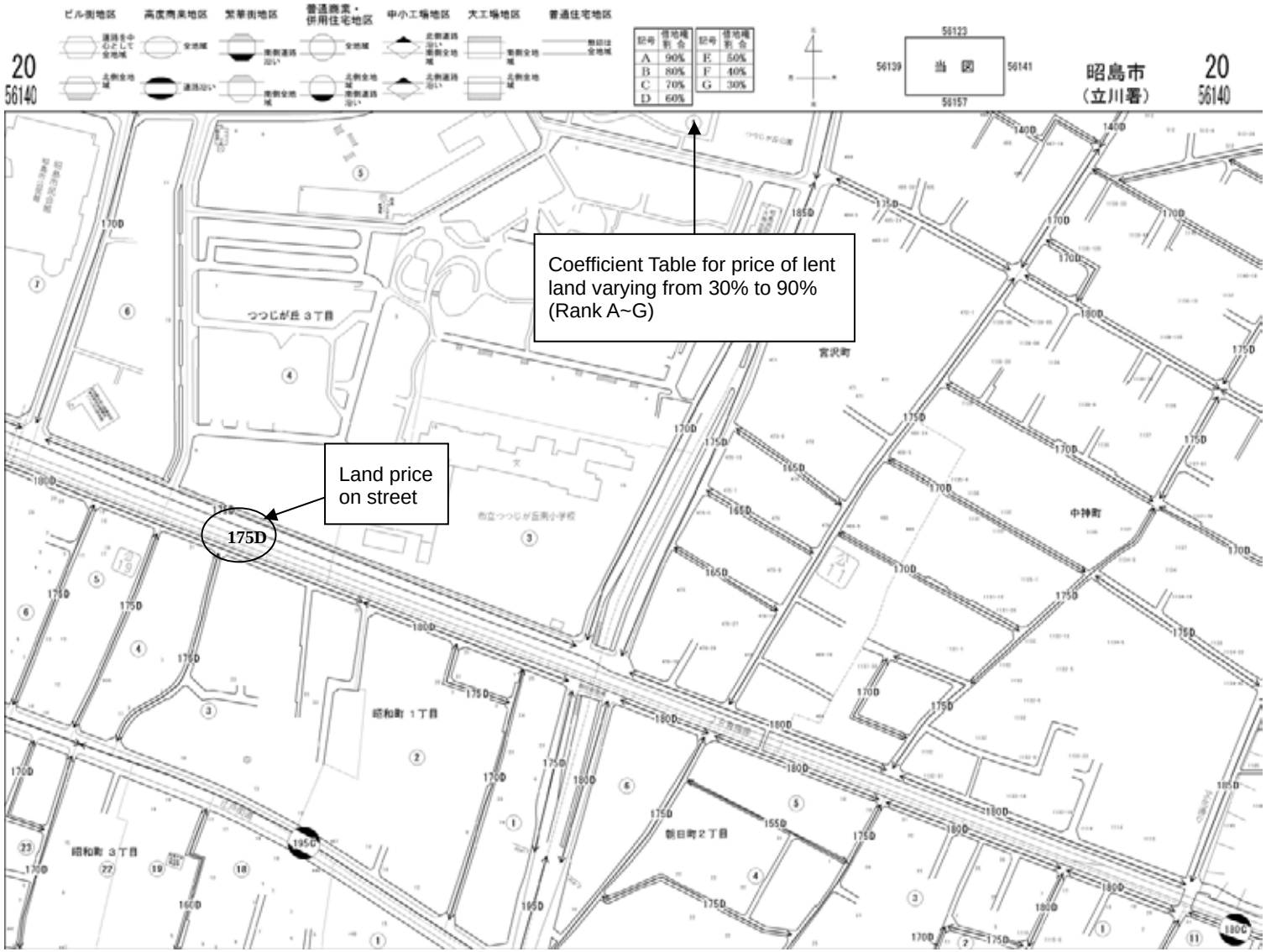
The government has planned the 7th Khoroolol development with park and green area on the west part of the area.

The west area for the planned green and park area is a permafrost area, with 900 households living that need to be relocated. Also, the residents complained about:

- Planning is too early
- Planning process is unclear
- They would like to live there continuously but the government plans the green area
- No relocation site development is fixed.

80% of the households of 900 households agreed to move into apartment houses; for relocation of the 900 households, the city is requesting US$ 50 million which is not yet approved and the relocation scheme has not been planned in detail yet.

Figure 12.4.1 Example of Land Value Assessment System in Japan

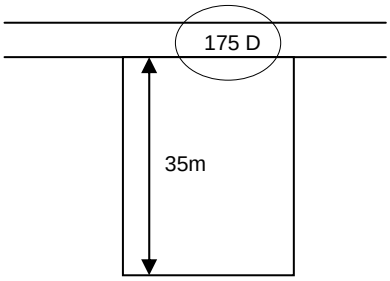


Source: National Tax Agency, Japan (http://www.rosenka.nta.go.jp/main_h20/tokyo/tokyo/prices/html/56140f.htm)

Box: Road-based Land Pricing System (in Japan)

Road-based Land Price is a standard price for 1 m^2 of land, based on which land price is valued. Price per m^2 is expressed in thousand yen in the map above.

Case 1: Land lot facing one road



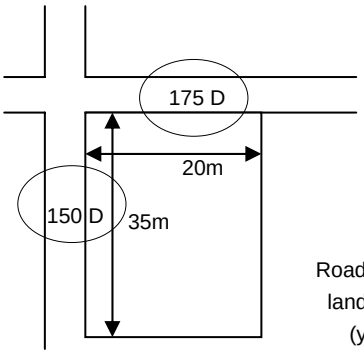
(1) Land value for self use

Road-based land price (yen)	X	modifying factor (35 m depth from road)	=	Land price (yen/ m^2)
175,000 yen	X	0.98	=	171,500
Road-based land price	X	Land area (m^2)	=	Land price of self use (700 m^2)
171,500	X	700	=	120,050,000 yen

(2) Land value for tenancy

Total land v of self-use	X	Ratio of Tenancy	=	Land price of tenant use (700 m^2)
120,050,000 yen	X	70%	=	84,035,000 yen

Case 2: Land lot facing two streets



(1) Land for self use

Road-based land price (yen)	X	modifying factor (35 m depth from road)	=	Land price (yen/ m^2)
175,000 yen	X	0.98	=	171,500

Road-based land price (yen)	+	Road-based price for the other road	X	modifying factor (20 m depth from road)	X	Road effecitive factor	=	Land price (yen/ m^2)
171,500 yen	+	150,000 yen	X	1.00	X	0.08	=	183,500

Road-based land price	X	Land area (m^2)	=	Land price of self use (700 m^2)
183,500	X	700	=	128,450,000 yen

(2) Land value for tenancy

Total land price of self use	X	Ratio of Tenancy	=	Land price of tenant use (700 m^2)
128,450,000 yen	X	70%	=	89,915,000 yen

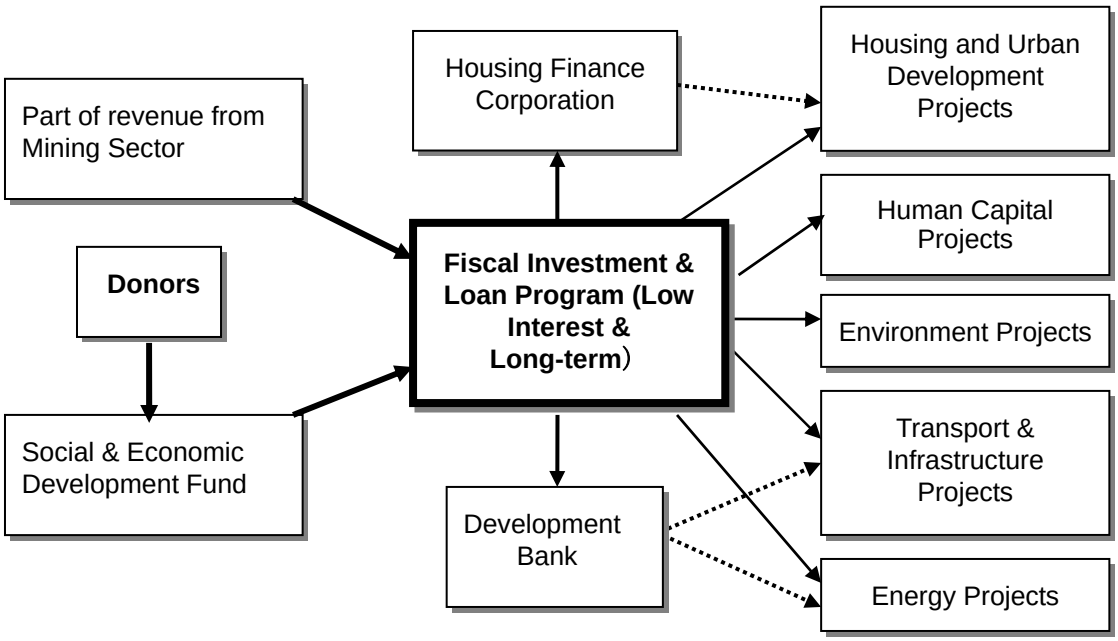
13. ENHANCEMENT OF DEVELOPMENT FINANCING CAPACITY

13.1 National Financing System for Social and Economic Infrastructure

In the process of implementing the Master Plan, many prioritized infrastructure projects will be identified together with a new regulatory framework which will enhance effectiveness and governance to secure transparency and accountability. This new framework and mechanism should be established while the economy is growing.

Referring to the experience in Japan, Fiscal Investment and Loan Program (FILP) was established by the government when private financial institutions were not well developed, and FILP was utilized for resource redistribution for alleviating excessive disparities between high and low incomers and cyclical adjustment for maintaining stability in the business environment. This was also to supply funds in order to supply good services required by society and to respond expeditiously and flexibly to social and economic circumstances. A similar financing mechanism for economic development deserves to be pursed for the Mongolian system. A provisional system is as shown in Figure 13.1.1.

Figure 13.1.1 Possible Financial Mechanism Using FILP



Source: JICA Study Team

13.2 Enhancement of Development Finance of Ulaanbaatar City

1) Basic Principles of Financing Public Services under Market Economy

There are six (6) basic principles to be applied when financing public services under the market economy as listed in Table 13.2.1. Most important principle is “Beneficiary pays in proportion to the amount of benefit of public services he receives”. Under the market economy the government is not a sole entity which shoulders all the cost of public service provision but the beneficiary of the services is the one who pays for the cost in proportion to the amount of benefit received. Therefore, all possible sources of funding need to be exploited such as user charge, beneficiary charge (capturing development benefit) and public funding such as direct tax and public borrowing from the market.

Under the market economy public services should be provided when it is economically and socially effective through utilizing market mechanism such as capital market, private sector participation and even through community participation.

Table 13.2.1 Basic Principles of Financing Public Services under Market Economy

1. Beneficiary pays in proportion to the amount of benefit of public services he receives
2. Tax imposition in proportion to the amount of economic value that tax payer creates or owns
3. Matching of service cost payment and benefit in terms of both amount and time
4. Best mix of three funding sources (public funding, user charge and beneficiary charge)
5. Utilization of Capital Markets
6. Facilitation of Stakeholder and Private Sector Participation

Source: JICA Study Team

2) Basic Strategy for Financing Public Services

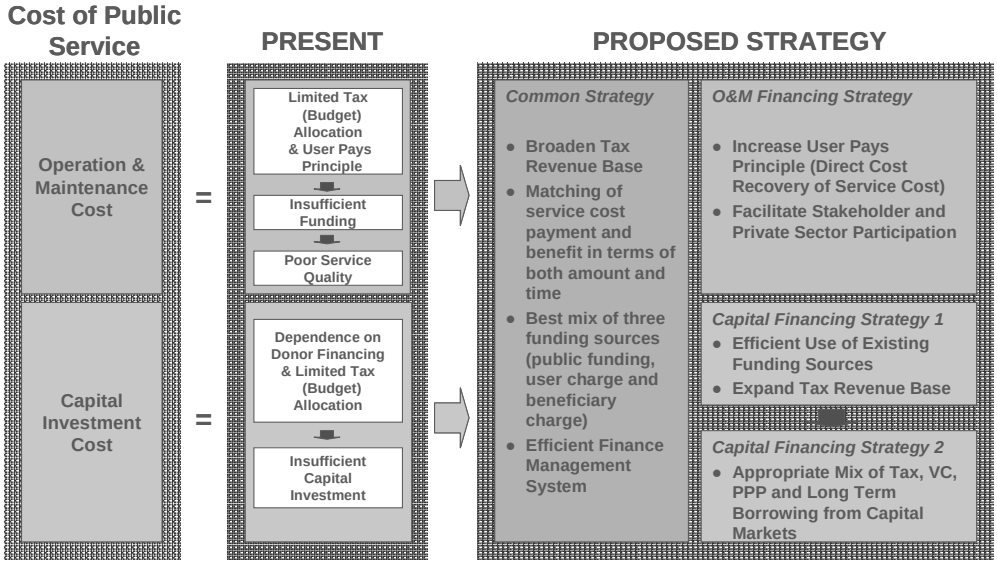
Figure 13.2.1 illustrates the basic strategy for financing public service provision in UB City. Most of the cost of public service provision involves two different costs. One kind is the cost of operation and maintenance and the other kind is the cost of capital investment for the facility used to provide the service.

The problem in common for the both cost category is a lack of sufficient budget allocation to construct necessary facilities and to maintain the service at adequate service level. Many of the public service tariffs are kept below the full cost recovery level and the application of the beneficiary pays principle is not enough. The cost of maintaining a good urban living and economy is usually very high. The residents of UB City including corporations and organizations need to have recognition that the public services for supporting urban living are expensive and to have a firm commitment in shouldering those costs.

The basic strategy has the following three (3) components:

- **Common Strategy:** which is commonly applied to both financing operation and maintenance and to capital financing
- **Operation and Management (O&M) Financing Strategy:** which is applied to the financing of operation and maintenance
- **Capital Financing Strategy:** which is applied to the capital financing

Figure 13.2.1 Basic Strategy for Financing Public Services



Source: JICA Study Team

3) Common Strategy

(1) Four (4) Components

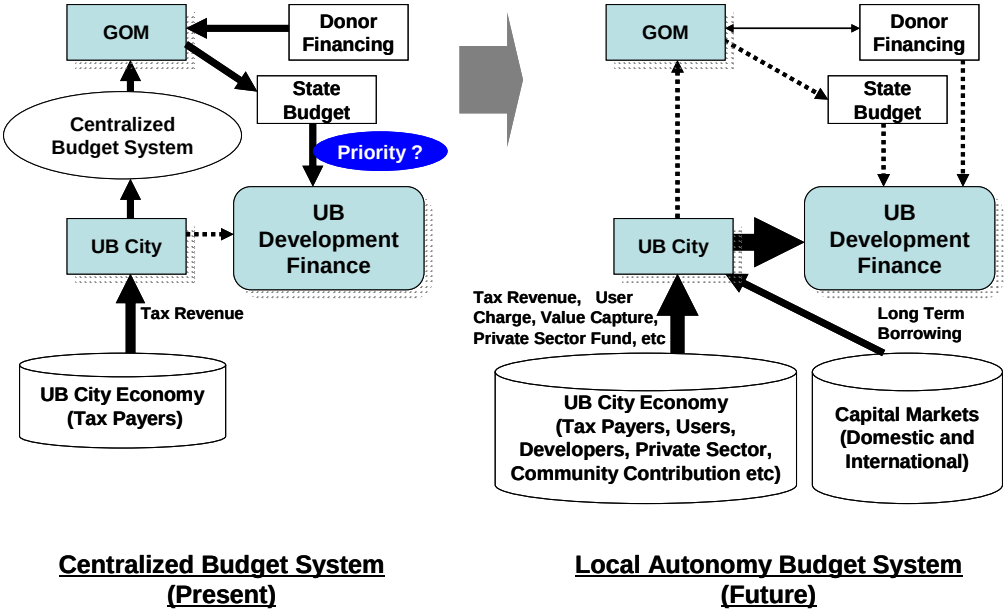
Common Strategy is composed of the following four (4) components:

- Broadening Tax Revenue Base
- Matching of service cost payment and benefit in terms of both amount and time
- Best mix of three funding sources (public funding, user charge and beneficiary charge)
- Efficient Finance Management System

(2) Broaden Tax Revenue Base

In order for UB City to have an adequate revenue size for the City's needs of infrastructure development and economic activities, it is essential to reform the current centralized revenue allocation system in which the City could not enjoy the freedom of attaining budget revenue size relative to its scale of economic activities as illustrated in Figure 13.2.2. Therefore, this is the first measure that UB City needs to consider.

Figure 13.2.2 Reform from Centralized Budget System to Local Autonomy Budget System



Centralized Budget System (Present) **Local Autonomy Budget System (Future)**

Source: JICA Study Team

However, within the framework of current fiscal system, it is recommended that improvement and expansion of property related taxation be considered in order to broaden the current revenue base of UB City. The tax rate should be determined very carefully after thorough assessment of the affordability of household of different income levels and should start at the minimal level of the tax rate. The following measures are proposed and at the same time the registration system of property asset needs to be upgraded for the effective imposition of these taxes.

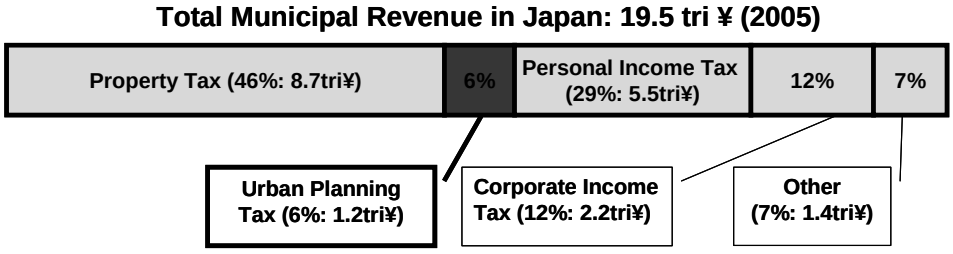
(a) Application of property related taxes: The followings are proposed:

- Application of real estate tax to both detached house and apartment owners
- Application of immovable property (building) tax to both detached house and apartment owners
- Increase of land fee rate

(b) Application of urban planning tax: Given that the above imposition of property related taxes is possible, application of urban planning tax is also recommended. Imposition of this tax is practiced in Japan as follows:

- Designated urban planning facilities (road, urban rail, bus terminal, parks, utilities, waste disposal, etc) & urban development are determined, for which the proceeds of the urban planning tax is used for the facility development and improvement.
- The tax is imposed on the property owners within the urbanized zone at the same time with the imposition of ordinary property tax
- The tax rate is 0.3% of the property value (land and building) while the rate of property tax is 1.4% of the property value.
- Figure 13.2.3 shows the share of urban planning tax which is six (6) %

Figure 13.2.3 Composition of Tax Revenue of Local Government in Japan



Source: JICA Study Team

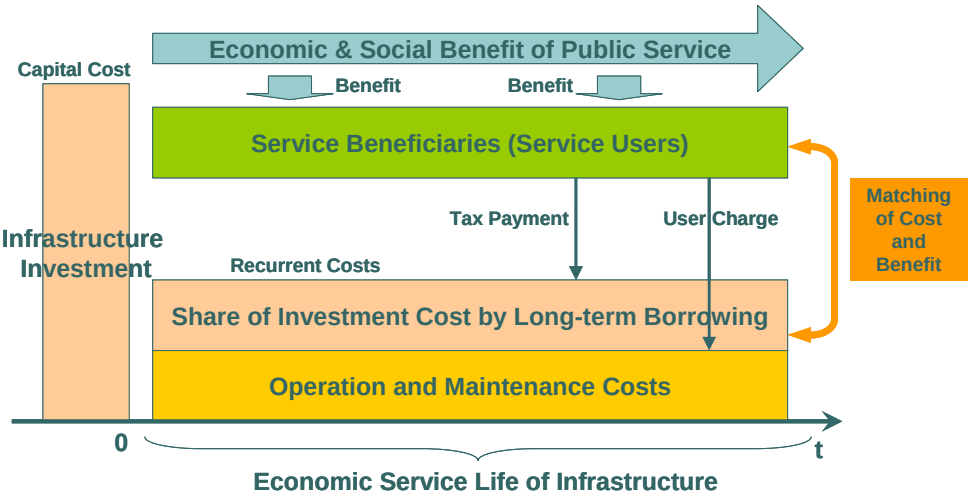
Since the tax rate of current property tax in UB City is 0.1 % of the property value, the rate of this urban planning tax should be carefully examined based on the affordability of household and may be worthwhile to include it as a part of property tax from the beginning in order to lessen the feel of burden by additional tax imposition.

(3) Matching Cost and Benefit

Majority of public service provision needs a large initial capital investment to construct a facility for the provision of the service. The economic life of the facility is usually very long such as 40 years. As explained earlier, the beneficiary of the service should pay the cost of service he or she receives. In another words, the beneficiary should pay, may be through the tax payment, the cost of constructing the facility in proportion to the service benefit he or she receives.

The operation and maintenance cost of the service provision may be covered by the user charge on the full cost recovery basis. However, it is usually very difficult to cover the large construction cost by the user charge alone since the public service tariff is kept very low taking the affordability of average household into consideration. Therefore, it is needed to cover the construction cost by the general tax payment. In order to distribute the construction cost evenly throughout the long economic life of the facility, the service provider needs to borrow the funding (the construction cost) in long term to match the long economic life of the facility so that the tax payment by the beneficiary at that time period could cover the fair distributed cost of construction. This is the “matching of cost and benefit” strategy of the public service provision to be applied to the fiscal management of UB City.

Figure 13.2.4 Matching of Cost Payment and Benefit of Public Services

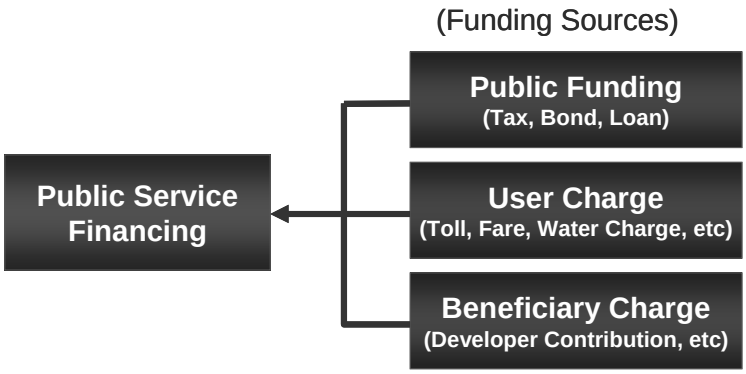


Source: JICA Study Team

(4) Best Mix of Three Funding Sources (Public Funding, User Charge and Beneficiary Charge)

There are three funding sources for financing the public service provision. UB city needs to use these three (3) funding sources mixed appropriately when ever possible. The public funding includes the tax revenue and the borrowing from the market by means of loan, bond issue and so on. The user charge is charge imposed on the use of water, power, transportation, road, parking and so on. The beneficiary charge is imposition of charges on beneficiary (residents, companies and other relevant organizations) of positive economic influence generated by the construction of large infrastructure such as mass transit system, expressway, integrate development of urban corridor and so on.

Figure 13.2.5 Best Mix of Three (3) Funding Sources



Source: JICA Study Team

(5) Efficient Finance Management System

In order to materialize the common strategy as described above UB City would need to improve the current finance management system in the following aspects:

(a) Transparent budget system

(b) Credible accounting system

(c) Independent audits

(d) Rational pricing policies

(e) Monitorable performance criteria for monopoly services

(f) Predictable fiscal relations with the central government

Efficient finance management system would help UB City to improve its creditworthiness in the capital market which is essential condition for UB City to borrow the fund of construction for infrastructure in long term from the market in the future.

4) Operation & Maintenance Financing Strategy

Basic Strategy for the financing of operation and maintenance of the public service provision is "From Government Pay Principle to User Pays Principle". Figure 13.2.6 shows the outline of the strategy in which a shift would be facilitated from the current funding sources inclined toward the public funding (GOV and UB City: Government pay) to appropriate mix of various funding sources (Beneficiary: Community, User Charge and Private Sector) to cover the operation and maintenance cost of public service provision.

Figure 13.2.6 Operation and Maintenance Financing Strategy

Government-pays Principle (Present)

URBAN PUBLIC SERVICE	CONSTRUCTION						OPERATION & MAINTENANCE					
	Funding Body					Service Quality	Funding Body					Service Quality
	GOM	UB	Community	User	Private		GOM	UB	Community	User	Private	
1. Transport	-	○	-	-	-	C	-	△	-	○	-	D
2. Utilities	○	○	-	-	-	C	△	△	-	○	-	D
3. Social Infra/Living Environ	○	-	-	-	○	C	○	△	-	△	○	D
4. Housing	△	△	-	○	○	D	△	△	△	○	-	D
5. Urban Development	-	-	-	-	○	D	-	-	-	-	○	D

User-pays Principle (Proposed)

URBAN PUBLIC SERVICE	CONSTRUCTION						OPERATION & MAINTENANCE					
	Funding Body					Service Quality	Funding Body					Service Quality
	GOM	UB	Community	User	Private		GOM	UB	Community	User	Private	
1. Transport	○	○	-	△	○	A	△	△	-	○	○	A
2. Utilities	○	○	-	△	△	A	△	△	△	○	△	A
3. Social Infra/Living Environ	○	△	△	△	○	A	△	○	△	○	○	A
4. Housing	△	△	○	○	○	A	△	△	○	○	○	A
5. Urban Development	-	△	△	△	○	A	-	△	△	△	○	A

Source: JICA Study Team

Based on the above general strategy, the following measures are proposed which will be discussed in detail in the later sections:

- Stakeholder participation: Community based housing and public service provision
- Private sector participation: Introduction of Public Private Partnership (PPP) system in public service provision

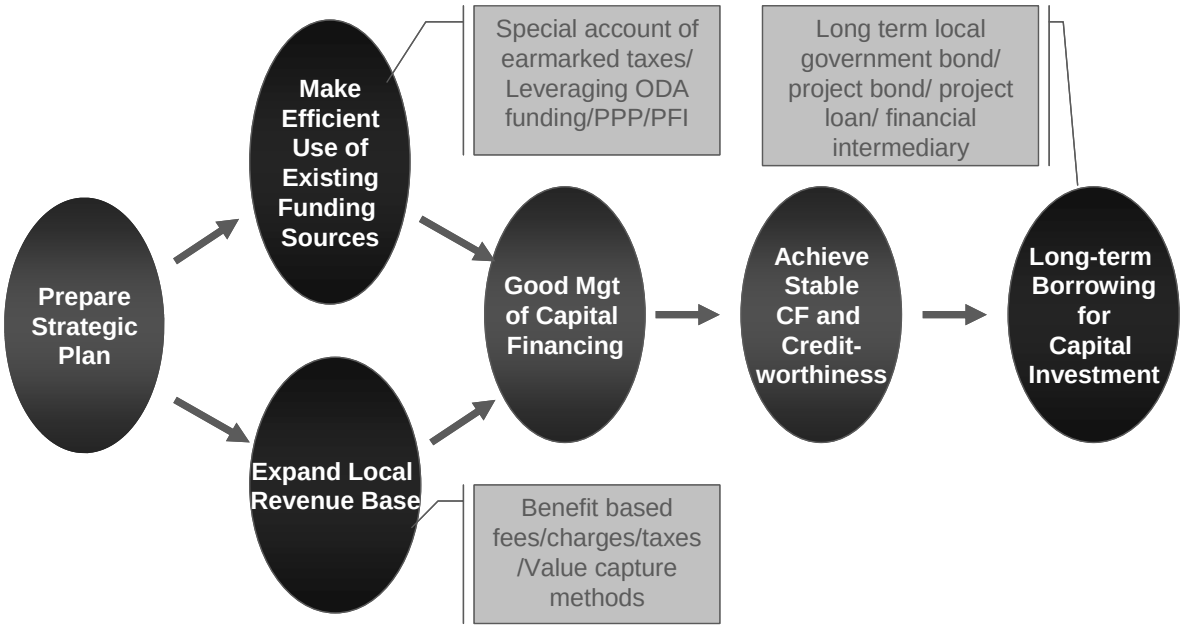
5) Capital Financing Strategy 1

(1) Twofold Strategy

Capital financing strategy is twofold as illustrated in Figure 13.2.7. The first step is to make efficient use of existing funding sources and to expand tax revenue base. Based on the creditworthiness of UB City created through the process of the first step, the second step is

to make UB City able to borrow the long term fund for the construction from the capital market.

Figure 13.2.7 Capital Financing Strategy 1



Source: JICA Study Team

(2) Make Efficient Use of Existing Funding Sources

(a) **Special account of earmarked taxes and budgets:** The UB Road Fund is an example of earmarking of user charge on the beneficiary for the improvement of facility used for the provision of public service, namely the road service. The fund earmarks the proceeds of vehicle registration fee and the gate way entry fee from car users at main roads entering into the UB City boundary. Similar earmarking of funding should be practiced more comprehensively in order to accumulate the fund for the new construction and improvement of the infrastructure facilities for the public service provision. One example of such earmarking could be systematic parking fee collection for the development of parking facilities in CBD area. Earmarking of central government fund should also be more actively practiced for the development of infrastructure for the public service provision of UB City.

(b) **Leveraging ODA funding:** One of the major funding sources for the development of infrastructure is ODA donor funding. However, the current use of donor funding is fragmented and not utilized in a concentrated manner. UB City should orchestrate the usage of the potential donor funding by streamlining and coordinating various interests presented by different donors and agencies on the basis of the recommendations made by this UBMPS. In addition, appropriate integration of the ODA donor funding, private sector funding and community based funding should be promoted by UB City. An example of this will be illustrated in the next section.

(3) Make Efficient Use of Existing Funding Sources

Facilitation of Value Capture Methods: Value capture method should be widely applied to capture the funding from the beneficiary (residents, companies and other relevant

organizations) of positive economic influence generated by the construction of large infrastructure such as mass transit system, expressway, integrate development of urban corridor and so on. Facilitation of the value capture methods should be carried out in the following measures:

(i) Facilitation of Value Capture Methods

- Development Charge: Charges on infrastructure cost at development permit
- Developer Contribution: Sharing on cost of road, utilities, park, school, hospital, community facilities and other infrastructures
- Betterment Charge: To compensate for the improved value accrued to the property owners – provision of public facilities, rezoning and change of FAR
- Infrastructure Service Fund: In Lieu payment of necessary infrastructure provision
- Development Incentive: Bonus Plot Ratio (BPR)

(ii) Application of Transfer of Development Right (TDR)

6) Capital Financing Strategy 2

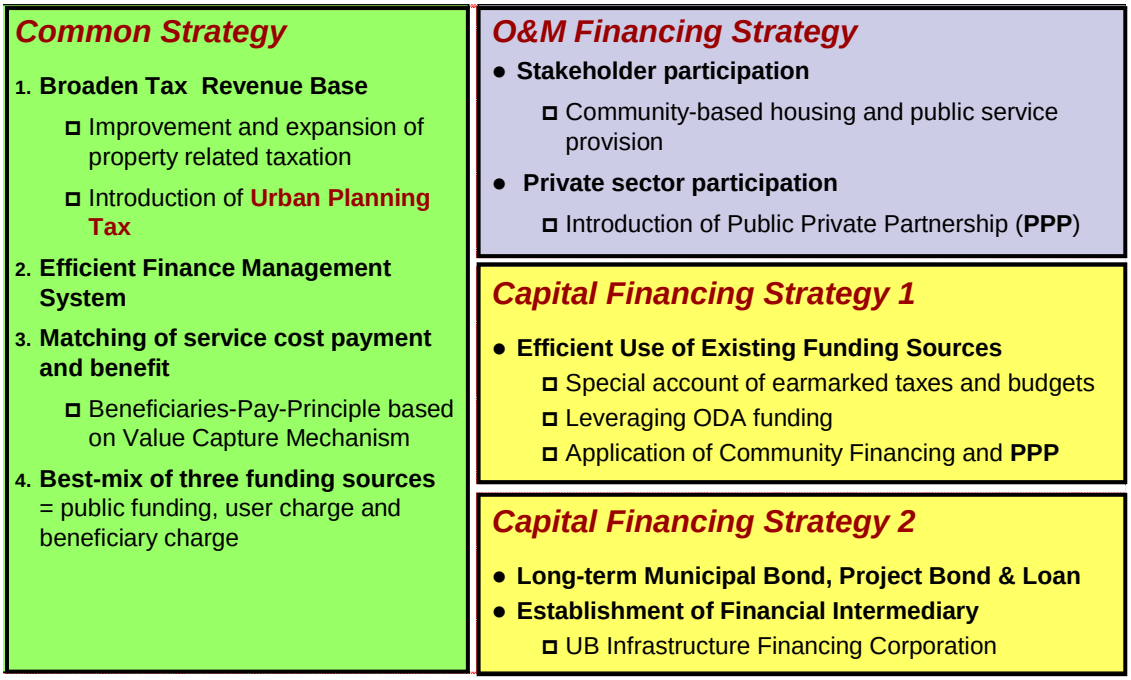
(a) **To make UB City able to borrow long term in the capital market:** The second step is to make UB City able to borrow in long term from the capital market on the basis of its own creditworthiness by means of long term municipal bond, project bond, project loan and so on. The financiers and investors for those financial products will assess the robustness of revenue flow, effective budgeting, efficient use of budget/ expenditure, independent audit and so on based on the efficient fiscal management system. The City should ultimately acquire its own credit rating from relevant credit agency to widen and increase the potential of fund raising in the capital market.

(b) **Establishment of UB Infrastructure Financing Corporation:** Establishment of a financing intermediary specialized for financing infrastructure development could make UB City able to have an efficient vehicle to tap financial resources of GOM, multilateral and bilateral financial institutions and ultimately of the domestic and foreign capital markets. It would bring to the UB administration the capacity building of market based financial management in financing public services. Although it may need central government guarantee in the beginning phase the financing intermediary could tap wider range of financial resources for UB City. Therefore, it is worthwhile for UB City to examine the possibility of establishing UB Infrastructure Financing Corporation (UBIFC) which is specialized in financing infrastructure development in UB City. UBIFC would play a role of financing intermediary in the beginning phase for taping financial resources from GOM and other sources and lending the proceeds to infrastructure projects of the UB City government as well as to its public service corporations and related entities. In the long run it could become able to borrow long term fund from the capital market leveraging its equity capital and based on its own creditworthiness. It could also issue general obligation bonds and project revenue bonds for revenue generating projects in order to tap the long term fund from the capital markets.

7) Summary of Proposed Measures

The proposed measures are summarized in Figure 13.2.8.

Figure 13.2.8 Proposed Measures for Financing Strategy



Source: JICA Study Team

8) Sector-wise Financing

(1) **Sector-wise Financing Characteristic:** When applying the above described financing strategies specific sector-wise characteristics should be considered as they are different among the sectors. Figure 13.2.9 shows the difference of such characteristics among the sectors in term of viability in utilizing different funding sources, especially the value capture methods, the user charges and the private sector participation.

Figure 13.2.9 Sector-wise Financing Characteristics

PUBLIC SERVICE		FUNDING SOURCES							
		CONSTRUCTION				OPERATION & MAINTENANCE			
		Tax	Donor	Value Capture	Private	Tax	Donor	User Charge	Private
1. Transport	1) Bus	○	○	-	○	△	-	○	○
	2) MRT	○	○	△	○	△	-	○	○
	4) Road	○	○	△	△	○	-	-	△
	3) Toll Road	○	○	△	○	-	-	○	○
2. Utilities	1) Power	○	○	-	△	△	-	○	○
	2) Heating	○	○	△	△	△	△	○	○
	3) Water Supply	○	○	△	△	△	△	○	△
	4) Sewerage	○	○	△	-	△	△	○	△
	5) Solid Waste	○	○	-	△	△	△	○	△
3. Social Infra/Living Environ	1) Public School	○	○	△	-	○	-	-	-
	2) Public Hospital	○	○	-	-	○	-	△	-
	3) Community Facilities	○	○	△	△	○	△	△	△
	4) Park	○	○	△	△	○	-	△	△
4. Housing	1) Middle-Income	△	△	△	○	△	△	○	△
	2) Low-Income	○	○	○	△	○	△	○	△
5. Urban Development		△	△	△	○	△	-	△	○

Note: ○: Major Funding Source, △: Minor Funding Source/Source of Subsidy, - : Not Applicable, Dark Colored: To Be Facilitated

Source: JICA Study Team

(2) **Current Status of Sector Reform:** GOM has been implementing the sector reform for various utility sectors based on the following basic scenarios:

STEP1: Unbundle the service market by seaprating the basic functions into policy making, regulation and service provision with instituting appropriate regulatory framework.

STEP2: Further unbundle the service provision when required by separating and corporatizing service functions (ex. power: generation, transmission and distribution).

STEP3: Adjust the tariff to the full cost recovery level with appropriate subsidy system during the transition period.

STEP4: Prepare fair, transparent and foreseeable rules and regualatory framework for competition.

STEP5: Privatize the public service providers, facilitate market entry by new private service providers and materialize service competition based on the market mechanism.

Table 13.2.2 shows the structure of various public service markets in UB City. All of the service provision functions has been corporatized and the current status of libelarization for all the sectors is at the above mentioned STEP3.

(3) **Sector-wise Financing Strategy:** Taking the above described characteristics into consideration the following sectors and projects are proposed with the viability for the specific mix of funding sources:

(a) Appropriate mix of Tax, PPP, ODA and Value Capture: BRT, MRT, Toll Road, Urban Development

(b) Community Based Financing and Value Capture: (Together with Housing Improvement) Heating, Water Supply, Sewerage, Solid Waste, Park, Social Facilities, Community Facilities, Urban Development

(c) Implementation method for value capture and PPP will be further elaborated sector-wise in the PPP section of this report.

Table 13.2.2 Market Structure of Public Services in UB City

Service	Policy	Regulation					Service Provison			Subsidy (Finance)
		Licensing	Performance	Tariffs	Tech. Stds	Env.Stds	Construction	O&M	Provision	
1. Water Supply										
(1) Use of Water Resources	MRTCUD	UB City Mayor	UB City Mayor, SPIA	UB City Mayor	MRTCUD	ME, Water Authority	MRTCUD, UB City	Central: USUG Cluster: Each Organization		All State Budget, Local Budget, Donor Funding
(2) Water Suppliers & Water Quality	MRTCUD, MH	MRTCUD	USUG, SPIA	UB City Mayor	MRTCUD	SPIA, MH, MRTCUD	MRTCUD, UB City	USUG	USUG	All State Budget, Local Budget, Donor Funding
(3) Water Distribution	MRTCUD, UB City	MRTCUD	USUG	UB City Mayor, MRTCUD	MRTCUD	MH, CSM	USUG	OSNAAUG	Ger Area, Large Users: USUG, Residential Area: OSNAAUG	No Subsidy
2. Waste Water										
(1) Waste Water Collecton	MRTCUD	MRTCUD	SPIA	UB City Mayor	MRTCUD, CSM	MH, MRTCUD	MRTCUD, UB City	USUG	USUG	All State Budget, Local Budget, Donor Funding
(2) Waste Water Treatment & Effluent Quality	MRTCUD	MRTCUD	USUG	UB City Mayor	MRTCUD, CSM	MH, MRTCUD	MRTCUD, UB City	USUG	USUG	All State Budget, Local Budget, Donor Funding
(3) Ger Area Sanitation	MRTCUD						Pit Latrine(Owner) / Donor/ NGO	Pit Latrine(Owner)	Pit Latrine(Owner)	No Subsidy
3. Power										
(1) Generation	MME	ERA	SPIA	ERA	MME, CSM	ME	MME. Private	TTP2,3,4	TTP2,3,5	All State Budget, Donor Funding
(2) Transmission	MME	ERA	SPIA	ERA	MME, CSM	ME	MME	CRE	CRE	All State Budget, Donor Funding
(3) Distribution	MME	ERA	SPIA	ERA	MME, CSM	ME	MME	UBEDN	UBEDN	No Subsidy
4. Heating										
(1) Transmission	MME	ERA	SPIA	ERA	MME, CSM	ME	MME	UBDH	UBDH	30% Cross Subsidy from Power Tariff
(2) Distribution	MME	ERA	SPIA	ERA	MME, CSM	ME	MME, UB City, Private	OSNAAUG	OSNAAUG	No Subsidy
5. Solid Waste										
(1) Collection	UB City, City Council	District Mayor	Mayor Office, District Mayor, City Council	Mayor Office, District Mayor, City Council	CSM, City Council	ME	CMPUA, District Cos, Private	CMPUA, District Cos, Private	CMPUA, District Cos, Private	No Subsidy
(2) Disposal	UB City, City Council	City Mayor, City Council	City Mayor Office	City Mayor Office	CSM, City Council	ME	UB City	CMPUA	CMPUA	All UB Budget
6. Bus Service										
(1) Operation	MRTCUD, UB City Governers Office	UB City Mayor	UB City Public Transport Department,	UB City Public Transport Department	MRTCUD	MRTCUD	MRTCUD, UB City Mayor , Private	UB City Public Transport Department, Private	UB City Public Transport Department, Private	State Budget (MRTCUD, Ministry of Finance)

Source: JICA Study Team based on the interviews to relevant agencies

MRTCUD: Ministry of Roads, Transportation, Construction and Urban Development
MH: Ministry of Health
USUG: The Water and Sewage company
OSNAAUG: The Housing service company
SPIA: State Professional Inspection Agency
CSM: Center of Standardization and Measurement
ERA: Energy Regulatory Authority
TTP2,3,4: Thermal Power Plant #2,3,4 State Owned Joint Stock Company
MME: Ministry of Minerals and Energy
ME: Ministry of Environment
CRE: Central Regional Electricity Transmission Grid State Owned Joint Stock Company
UBEDN: Ulaanbaatar Electricity Distribution Network State Owned Joint Stock Company
UBDH: Ulaanbaatar District Heating State Owned Joint Stock Company
CMPUA: City Maintenance Public Utility Agency (UB City)

13.3 Community based Financing Mechanism for Ger Area Improvement

Application of Community Based Financing and PPP (Community Fund Structure): As a part of Self-help Mechanism for Ger Area Improvement and Apartment District Redevelopment, a community fund system may be developed as illustrated in Figure 13.3.1. A community fund will be created with funding from the Government of Mongolia on the basis of ODA grant money or ODA loan to be on-granted to the Ulaanbaatar City together with periodical saving deposit from the land owners in the community. A cooperative of the land owners will be formed as a legal implementing body of the system. A NGO which is capable of managing such fund will become a fund manager of the community fund with assistance from a commercial bank. An escrow account will preferably be used for the management of the community fund.

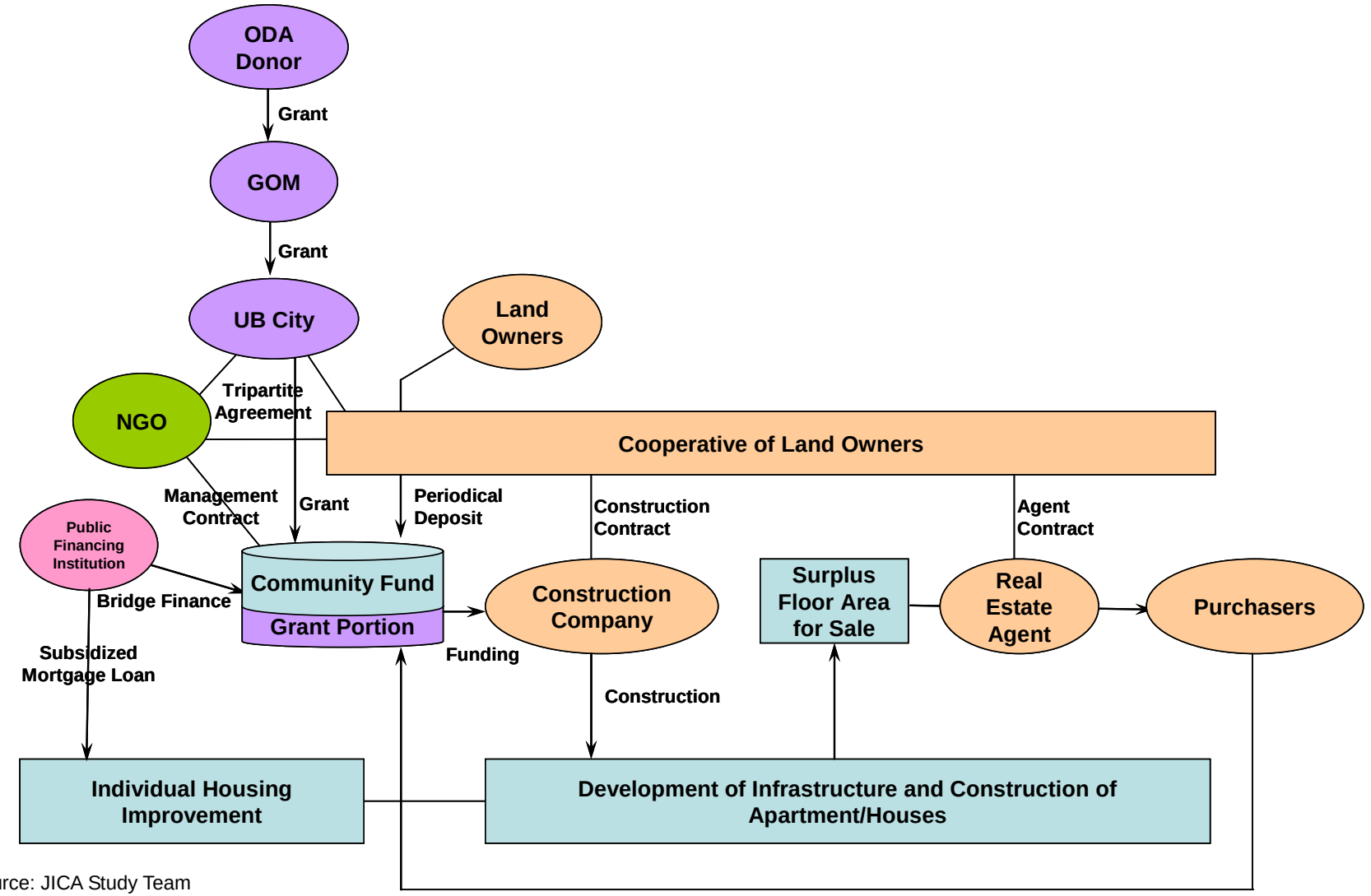
A tripartite agreement will be signed by Ulaanbaatar City, the cooperative of the land owners and the NGO. Using the grant and the saving deposit money from the land owners as the own funding[1] the cooperative will borrow the bridge finance from public financing institution like MHFC to construct a mixture of middle rise and high rise condominium buildings and apartments which will house the land owners of the community. Surplus floor area will be created in the development and will be sold to the market to supplement the investment of necessary infrastructure provision and the community facilities, and will repay the bridge finance from the public financing institution.

The public financing institution will also play an important role in providing subsidized mortgage loan to the middle and lower income households who wish to do additional housing improvement and to those households who wish to move in to the community.

More elaborated form of community based financing mechanism will be discussed in Chapter 15.

[1] The loan to value ratio should be less than 80% under the current commercial lending market, in other words, more than 20% of the own funding will be required.

Figure 13.3.1 Proposed Community Fund Structure



Source: JICA Study Team