

## **(2) Learning Session Materials**

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Learning Session for UBMP5 JICA

# Introduction to Urban Planning

July 24, 2007

Dr. K. Nagayama  
Deputy Team Leader, JICA Study Team

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## Topics

1. What is required by "Urban Planning" ?
2. What should "Urban Planning" address ?
3. What process is needed for "Urban Planning" ?
4. Some Notable Planning Agenda

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## Topics

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## Urbanization.....

Figure 1.1: Within a generation the emerging world will be predominantly urban

Country	1990 (%)	2020 (%)
Bangladesh	~15	~55
India	~25	~55
China	~35	~65
Indonesia	~45	~65
Brazil	~65	~75
Mexico	~75	~85
USA	~85	~90
Japan	~90	~95

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## How to manage "Urbanization"?

- Rapid population increase is taking place in cities.
- Rural-to-urban Migration is predominant.
- Pull effect (Urban)+ Push effect (Rural)

↓

Urban "bright" or Urban "blight" ?

**Growth Management**

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## Poverty alleviation is a challenging urban issue.

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## Poverty alleviation is a challenging urban issue.

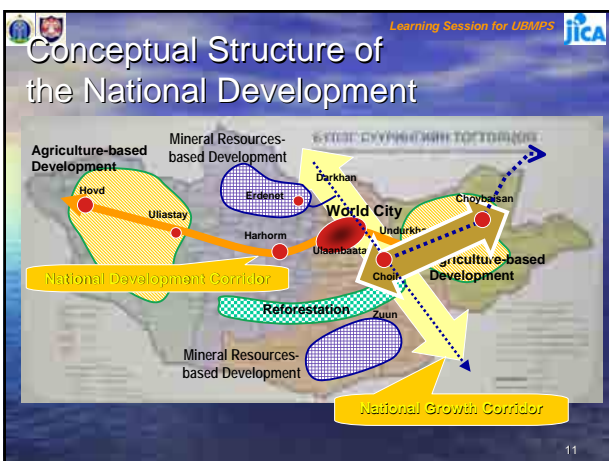
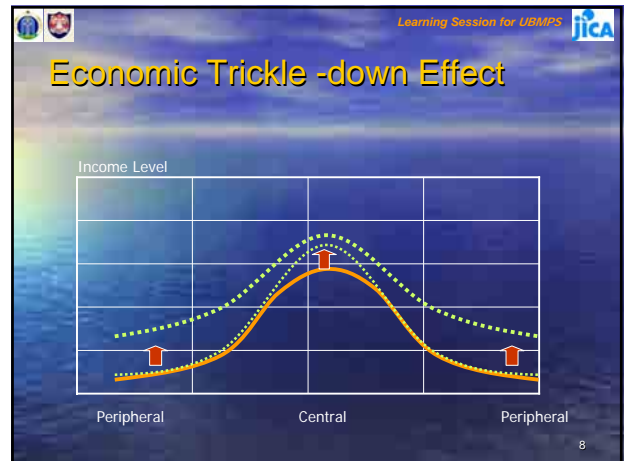
- Poverty is related to "Employment, Education, Health, Housing, ....."
- Rural economy is a reason of "Being Poverty".
- Economic Trickle -down Effect

↓

Planning Target vs. Political Target?

**Growth Management**

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- ## Topics
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  4. Some Notable Planning Agenda
- 12

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### Four (4) Principles of Urban Planning

1. Public Benefits first
2. Priority to "Conservation"
3. Keep moving with 4Es (Engineering, Education, Enforcement)
4. Secure People's "quality of life"

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### Common issues held by cities

1. Lack of sufficient infrastructures and public service facilities
2. Poor institutions for urban planning and growth management;
3. Weak financial and tax basis of local governments;
4. Less coordination and integration among locally available resources;
5. Less autonomous motivations due to a centralized resource allocation system.

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### Five Planning Issues

- Issues:
  - Livability
  - Competitiveness
  - Bankability
  - Good Governance
  - Environmental Conservation

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### Key Elements for Urban Planning

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### Planning Elements for Sustainable Urban Growth

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### Key Factors/ Elements to Successful and Meaningful Master Plan

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## Contents of Urban Master Plan

1. Urban Planning Policy (Goals and Missions)
2. Urban Land Use & Zoning
3. Transport System & Structure
4. Urban Infrastructure and Utilities
5. Housing and Living Conditions
6. Urban Environment and Disaster Management
7. Urban Growth Management and Governance
8. Financial Capacity Strengthening

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## Strategic Planning Process

1. Where are we now?  
(Diagnostic Analysis, Comparative advantages)
2. Where would we like to be?  
(Future Visions)
3. What issues do we need to address?  
(Formulation of Projects/Programs)
4. What action must we take to get there?  
(Prioritization, Implementation Programming)

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## Rationales of Planning Process

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## Strategic Planning Approach...

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## Stakeholders Workshop

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## Setting of Planning Goals

For up-lifting people's quality of life

**Ulaanbaatar Urban Visions**

- More smooth people's mobility!
- Livable Housing
- Help the poor!
- Environment-conscious!

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## Issues and Measures of Urban Planning

**Issues of Urban Planning**

1. Create "Livable City" for All
2. Achieve sustainable and competitive economic growth
3. Strengthen the municipal financing capacity
4. Assure Environmental Conservation
5. Prepare legal Framework for Growth Management & Good Governance

**Urban Planning Issues**

- Public Transport System
- Land Use Zoning
- Road Transport Network
- Industries, Business, Tourism & FRI Inducement
- ICT and Urban Utilities
- New Taxation and Laws
- Alleviation of Environmental Pollution

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## Demand-Supply Gap Fulfillment

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## Public Transport Modal Hierarchy

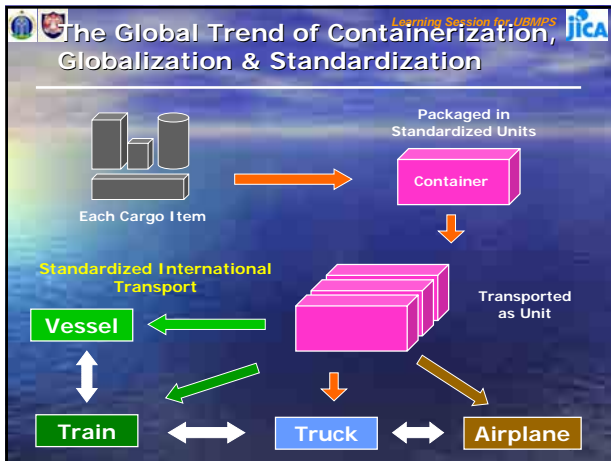
Available Modal Systems

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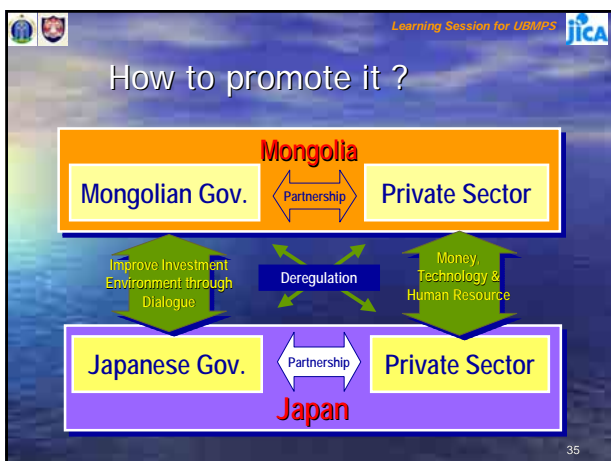
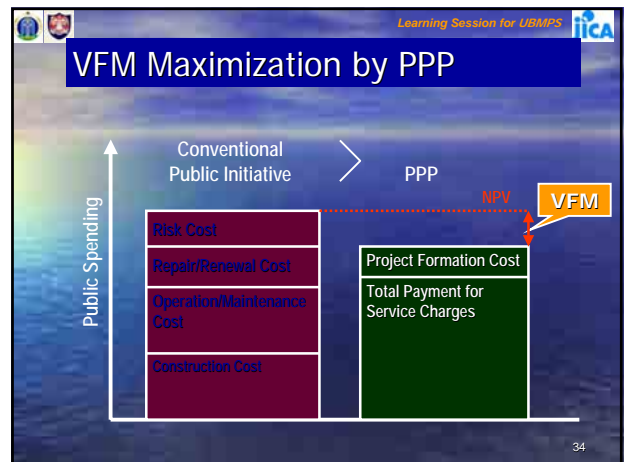
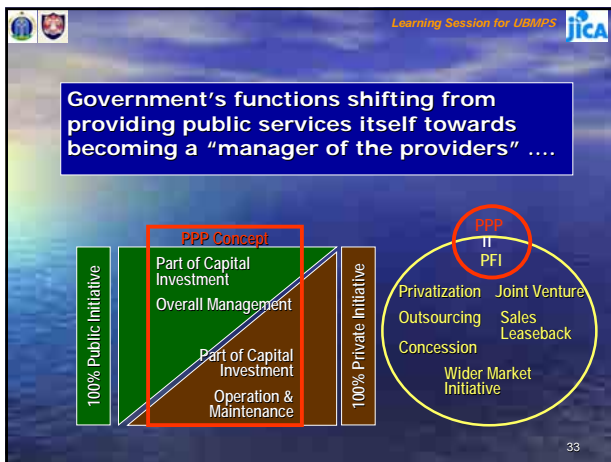
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## Multimodal Cargo Transport and Unit Load System

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- ### What is PPP?
- **Establish partnership** with commercial market, Government & communities  
→ From Vertical Relation to **Horizontal Relation**
  - **Facilitate** business sector's participation  
→ Deepen Communication with **Stakeholders of Development**
  - **Re-define** government's roles for **social and economic development**  
→ Adopt new positive "Social Welfare Policy"



- ### Let's remind four (4) principles of Urban Planning ...
- **Public Benefits first**
  - **Priority to "Conservation"**
  - **Keep moving with 4Es (Engineering, Education, Enforcement)**
  - **Secure People's "quality of life"**
- Thank you ..





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**Contents of the Presentation**

The Study on UB City Master Plan & Urban Development Program

1. Significance of Transportation
2. Extent of Transport Planning
3. Present Situation Encompassing Transport Planning
4. General Issues and Goals for Transport Planning
5. Particular Issues for Transport Planning in Ulaanbaatar
6. Lessons Learned from Curitiba's Accomplishment

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**1. Significance of Transportation**

The Study on UB City Master Plan & Urban Development Program

- ✓ Transportation is indispensable infrastructure for socio-economic activities.
- ✓ Functional and efficient transport system can sustain desirable urban structure as well as promote preferable land use.
- ✓ Since land-locked countries face higher transport costs than those in coastal areas, the transport strategy should offer potential additional benefits to the national vision of economic development

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**2. Extent of Transport Planning**

The Study on UB City Master Plan & Urban Development Program

- ✓ Transportation means "Movement of passengers and goods".
- ✓ Due to envisaging transport system as a whole, the extent of transport planning is limited to i) Transport modes, ii) Transport facilities to render services and iii) Services associated with institutional arrangements.
  - Transport modes: automobiles and air planes
  - Transport facilities: roads and airports
  - Institutional arrangements: organization, institution and fund

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**3. Present Situation Encompassing Transport Planning**

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- ✓ The disparity regarding the freedom of movement so-called as "transportation right" widens.
- ✓ Urbanization and motorization grow rapidly all over the world and consequently various traffic problems occur.
- ✓ Necessary measures should be taken to enhance capacity for building efficient transport system and to improve institutional arrangements for sustainable development

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**4. General Issues and Goals for Transport Planning**

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A) General Issues for Transport Planning

- i. Impediment and disincentive to smooth traffic flow due to rapid urbanization and motorization
 

The sprawl is accelerated and it provides an environment conducive to life style to depend upon private cars. It falls into a car-road spiral.
- ii. Enhancement of concerns about poverty issues
 

The most serious concern in ODA is to reduce poverty problems. Transportation can contribute to promote "inclusive growth" or "pro-poor growth".
- iii. Shortfall in capacity of finance and governance
 

Private sector should be encouraged to participate in transport business. It is necessary to accommodate higher capacity to cope with transportation issues through the management cycle.

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B) Parameters for Transport Planning

- i. Capacity development for transportation administration
- ii. Cross-border infrastructure development for globalization and regionalization to mitigate the nation's "land-locked" disadvantages and strengthen its regional role as a "land-linked" nation
- iii. Well-balanced development of the country (nationwide)
- iv. Sustainable development with quality of life (urban transport)
- v. Strategic regional development with better living standard (regional transport)

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**5. Particular Issues for Transport Planning in UB**

- A) Relationship between On-going Road Improvement Plan and Future Road Network in Ulaanbaatar City
- B) Securing funds for road improvement
- C) Private cars and mini-bus to cope with Rapid Increase of Vehicular traffic demand
- D) Excessive Concentration of traffic congestion in the central business district (CBD)
- E) Implementation of Identified projects in UB City Master Plan 2020
- F) Short-term Improvement

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**6. Lessons Learned from Curitiba's Accomplishment**

A) Integration of Transportation and Land-use

- i. Mobility underpinned by efficient bus service created densification of development along the bus routes.
- ii. Sustainable urban transport development together with suitable integration of business development, road infrastructure development and local community development comes in reality.
- iii. The integrated transportation and land-use is vital to the urban development, supporting strategic growth management by developing a compact and energy-efficient urban structure and enhancing the quality life of residents, and resulting in reduction of automobile dependency.
- iv. The infrastructure investment for bus system at the reasonable level makes public transport self-sustainable without any subsidies.

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B) Comprehensive Bus System

- i. Express bus, rapid bus and double articulated bus are operated exclusively on dedicated bus lanes of major arterial streets.
- ii. The bus system has tube-shaped stations that require payment to enter. This bus stop is designed for protection from the weather and for quick bus entry and exit.
- iii. The idea of an all-bus transit network with dedicated bus lane creates along well-defined structural axes that are also used to channel the city's growth. The transit system must be rapid and cheap.
- iv. A standard fare is charged for all trips, meaning shorter rides subsidize longer ones. Such "social fare" promotes equality, benefiting poorer residents settled on the city's periphery. All revenue from bus transit goes to a fund and bus operating companies are paid on a traveled distance- proportionate basis.

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**Comparison between Curitiba and Ulaanbaatar**

	Curitiba	Ulaanbaatar
Urbanized Area Population (persons)	2,250,000	896,800
City Population (persons)	1,600,000	496,100
City Area (km <sup>2</sup> )	803	812
No. of Buses (vehicles)	1,100	908
No. of Bus Trips	12,500	8,371
No. of Bus Passengers	1,300,000	
Motorization (Veh. per 1000 persons)	333	77
Portion of Transport Expenditure on Yearly Income	10%	
Municipal Budget	US\$600 million	

**The Study on UB City Master Plan & Urban Development Program**

The Study on City Master Plan and Urban Development Program of Ulaanbaatar City (UBMPS)  
Intensive Learning Session on Urban Planning under Market Economy

# Urban Planning in Japan

## - Overview of General Legal Structure -

Morning Session: July 25, 2007

Dr. K. Nagayama  
Deputy Team Leader, JICA Study Team

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# Topics

1. What is the Japanese Urban Planning Law stipulating ?
2. An example in Hiroshima City
3. Some Notes in Planning Agenda

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# Hierarchical Land Use Planning System

The diagram shows a pyramid with three levels: National Land Use Policy, Regional (Prefecture) Land Use Policy, and City Land Use Plan & Urban Master Plan. To the right, boxes represent the National Land Use Planning Act and the Urban Planning Act. Further right, a list of laws and ordinances is shown: Constitution, Civil Law, Capital Region Development Law, Fire Defense Law, Building Code, and Local Ordinance.

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# Overall Urban Planning System in Japan

The flowchart shows the hierarchy of planning. At the top are 'Upper Level Plans' including the National Land Use Plan (National-Level Plan) and the National Land Use Plan (Prefecture-Level Plan). The Prefecture-Level Plan leads to the 'Master Plan for City Planning Areas (by Prefecture Government)' and the 'Designation of "City Planning Area"'. The City Planning Area leads to the 'City Master Plan (by the Municipality)'. The City Master Plan leads to the 'Designation of "Urbanization Promotion Area"'. This area then leads to 'Land Use Regulations - Zoning (Zones & Districts) - Special Districts, etc.', 'Urban Facilities - Roads, Parking, Parks, Utilities, Schools, Public Services, Terminals, etc.', and 'Urban Development Projects'. 'City Basic Principles' also influence the City Master Plan.

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# Land Use Regulations

Land Use Zone	Policy Zone/District
1. Exclusively Housing Zone for low-rise Building (Class-1)	Intensive Land Utilization Zone
2. Exclusively Housing Zone for low-rise Building (Class-2)	Fire Prevention Zone (Primary)
3. Exclusively Housing Zone for Medium- and High-rise Building (Class-1)	Fire Prevention Zone (Secondary)
4. Exclusively Housing Zone for Medium- and High-rise Building (Class-2)	Parking Facilities Development Zone
5. Housing Zone (Class-1)	Architectural Merit-Priority Zone
6. Housing Zone (Class-2)	Natural Beauty Promotion Zone
7. Semi-housing Zone	Open Space Conservation Zone
8. Neighborhood Commercial Zone	Distribution Industry Zone
9. Commercial Zone	Harbor District
10. Semi-Industrial Zone	
11. Industrial Zone	
12. Exclusively Industrial Zone	

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## Urban Development Project

- Land Readjustment Project
- Urban Redevelopment Project
- New Residential Area Development Project
- New Town Infrastructure Development Project
- Residential Block Development Project
- Industrial Estate Development Project

The implementation of "Projects" are all guided by respective legal acts

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## Topics

1. What is the Japanese Urban Planning Law stipulating ?
2. **An example in Hiroshima City**
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## City of Peace "Hiroshima"

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## Three Legal Boundaries

Hiroshima City

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## Designated "Zoning System"

12 Zones in total:  
 Housing = 7 Zones  
 Commercial = 2 Zones  
 Industrial = 3 Zones

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## Urban Development Projects


Three (3) types of Projects:  
 (A) Land Readjustment Projects  
 (B) New Residential Area (New Town) Development Projects  
 (C) Urban Redevelopment Projects

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## (A) Land Readjustment Project

- The LRS project operates by adjusting the boundaries of land plots in order to build roads, parks and utility service facilities, etc.
- This improves the value of residential property in the project area, although this involves reduction of individuals' land areas to share a reserved land area.
- The reserved land shall be sold at market prices to cover the project cost.



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## (B) Urban Redevelopment Project



An Urban Redevelopment Project is undertaken where land is not efficiently used, where disaster prevention measures are difficult with environmental problems.



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## (C) New Residential Area (New Town) Development Project



New Towns are developed as one of urban planning projects which legally designated in sub-urban 10-12 km far from the center of City.



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## Integrated Urban Transport Network



Seamless Transport Network



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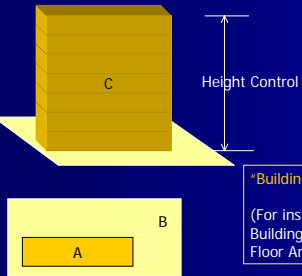
## Topics

- What is the Japanese Urban Planning Law stipulating ?
- An example in Hiroshima City
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## Building Control



Building Area = A m<sup>2</sup>  
Land Area = B m<sup>2</sup>  
Total Floor Area = C m<sup>2</sup>

Height Control

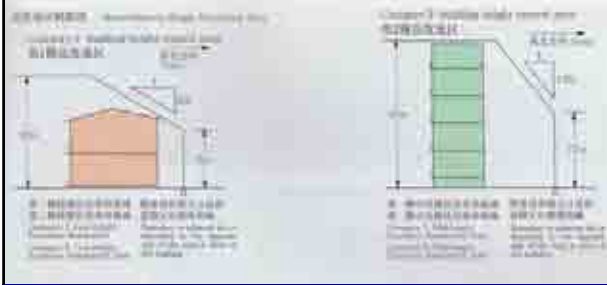
"Building Control Regulations" :  
(For instance)  
Building Area Ratio (A/B) =< 40%  
Floor Area Ratio (C/B) =< 300%

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# Building Height Control

Different Constraints are applies, depending upon zones



## The Land Readjustment System will be introduced ...

*Thank you*

## Land Readjustment System (LRS)



THE STUDY ON CITY MASTER PLAN AND URBAN DEVELOPMENT PROGRAM OF ULAANBAATAR CITY IN MONGOLIA

1

## 3 Principles of Urban Development Projects

1. Securement of Assets Holders' Property Values
2. Community Participation
3. Promotion of Public Benefits → to be assured through an Urban Planning Framework

2

## Areas Suitable for LRS

- **Narrow roads and shortage of infrastructures**
- **Susceptible for floods and disasters**
- **Not hygienic due to poor solid waste management**
- **Environmentally poor without open space, green and parks for**

3

## Common Principles of LRS and Urban Redevelopment System

- Participation of all land owners and leaseholders
- Equivalent Exchange of assets values of "before" and "after"
- Improvement/development of public facilities and utilities

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## まちづくりの方法

- 自治体などが土地の所有者などから意見を聞き、一緒にまちづくりの計画をつくります。
- その計画に沿って、一定の区域を定め、土地の所有者から公平に少しずつ土地を提供してもらい、道路や公園、宅地などを総合的に整備します。
- 道路事業などのように、一つの施設を買収することによって整備する方法と異なり、面的な広がりを持った広い地域にわたって一括して整備ができます。



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## 6 Benefits from LRS

1. **Deliberate Supply of High Quality Housing areas**
2. **Improvement of Livable Environment**
3. **Being Robust against Disasters**
4. **Intensive and Efficient Land Use**
5. **Raise of Asset Values**
6. **Readjustment of Address Indications**

6

## 1. Supply of High Quality Housing areas

- Environmentally sound urban housing areas can be provided...



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## 2. Improvement of Livable Environment

- Roads, Streets, Drainage systems and Parks can be developed...
- Urban Utilities can be developed, too...
- Land shapes can be orderly arranged...
- Parks and play-grounds can be properly provided...



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## 3. Being Robust against Natural Disasters

- Housing areas are robust against disasters such as flooding, fires and earthquake...
- Emergent rescue activities can easily approach to the area...
- Preparedness of disaster management can be improved at community level...



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## 4. Intensive and Efficient Land Use

- Land areas can be deliberately and efficiently utilized, because the land shapes can be orderly arranged....



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## 5. Raise of Asset Values

- The land value after the LRS project can usually be increased because of improvement of roads and infrastructure.
- Eventually, land owner's asset value will be raised after the project, even his/her land area is reduced by payment of contributions.

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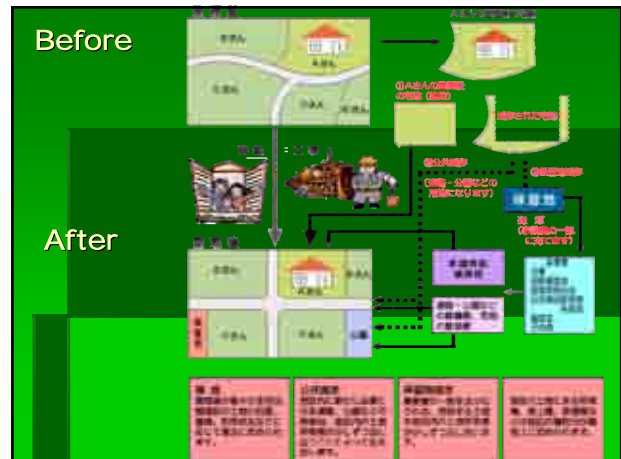
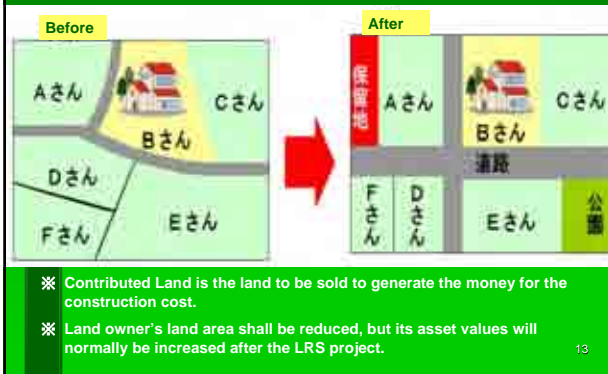
## 6. Readjustment of Address Indications

- The postal address system can be improved because address indications will be orderly arranged...
- Community activities can be encouraged through the implementation of the project

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## Mechanism of LRS



## Who can be the LRS project proponent?

1. Individuals
2. Land Readjustment “Association”
3. Land Readjustment “Company”
4. Local Government
5. Ministry (Central Government)
6. Other public entities designated by the law.

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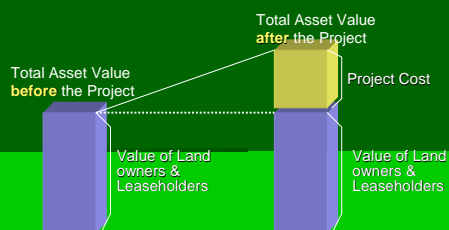
## How to procure the fund for the construction?

1. By selling out contributed land areas at the housing market
2. Partially from government subsidies for development of public facilities

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## A Basic Mechanism of LRS

**Total Asset Value (TAV) after LRS > TAV before LRS + Project Cost**



## Process of LRS Project

Implemented by a Local Government

- I: Research & Investigation
- II: Planning
- III: Implementation of the Project
- IV: Final Settlement of the Project

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## I: Research & Investigation

- All stakeholders are invited to attend a public hearing meeting on the LRS Project
- Detailed explanations on the LRS project should be given to all stakeholders, including:
  - Objectives and development concepts of the Project;
  - Designated area to be implemented;
  - Methods of land location and geographical survey & geological survey

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## II. Planning

### II-1. Preparation of a LRS Project Implementation Plan

1. "LRS Project Implementation Plan" is established, based on a participatory approach.
2. The Plan should be made available for "Public Inspection" for 2 weeks.
3. Should comments be raised by the general public, those should be clarified at the Urban Planning Committee.
4. The LRS Implementation Plan should be finalized, being reflected by the instructions by the Urban Planning Committee.

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### II-2. Surveys & Studies to be conducted

- Land Measurement Surveys
- Buildings-related Surveys  
(Building-use, age, structure and other attributes)
- Compilation of Legal Registrations  
(land, buildings, mortgage/security, etc.)

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### II-3. Establishment of the "LR Project Deliberation Council"

- Board members of the LR Project Deliberation Council shall be elected from all land owners and/or leaseholders.
- The LR Project Deliberation Council is given decision-making power for:
  - Designation of temporary re-plotting scheme
  - Clarification of public comments
  - Selection of "Asset Value Assessors" for land and buildings

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### II-4. Preparation of a "Land Re-plotting Plan"

- Based on the land surveys and the approved implementation plan, a "land re-plotting plan" should be prepared.
- The land re-plotting plan indicates a new plotting structure of all pieces of land where the present land will be re-shaped.

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## III: Implementation of the Project

### III-1. Preparation of a draft of "Land Re-plotting Plan"

- A land re-plotting plan is drafted, based on suggestions and instructions raised by the LR Project Deliberation Council.

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### III-2. Final Resolution of re-plotting Plan

- Based on instructions and advice of the **LR Project Deliberation Council**, a detailed financial plan shall be made, including liquidation accounting.
- Should no agreement be made among land owners/leaseholders, **the Council** shall arbitrate to reach an agreement.
- **The final re-plotting plan** shall publicly be announced and legally designated.

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### III-3. Relocation and New Construction

- The existing buildings shall be moved or relocated onto newly plotted land area.
- Roads, urban utilities such as water supply, drainage and sewerage system, park are constructed.

Notes: Objectives for compensation are: 1) buildings; 2) structures, 3) trees, 4) movable assets such as business rights, etc.

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## IV: Final Settlement of the Project

### IV-1. New Arrangement of Postal Codes and Address Indications

- Along with readjusted land plots, a new postal codes and address indications shall be arranged.
- The new address system shall be effective and publicly announced from one day after the re-plotting was undertaken.

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### IV-2. Financial Settlement of the Project

- Payment for liquidation accounts shall be undertaken to make a balance of the exchanges of land between “before” and “after”.
- Liquidation is made by payment of money to fulfill a gap between the before- and after-land values.

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### IV-2. Legal Registration of New Property Assets

- Legal registration of new land and buildings shall be undertaken by the project executer (proponent).

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## Critical Elements for Success of LRS Project

1. Consensus of Stakeholders
2. Existence of the sound real estate market (demand-driven market is favorable)
3. Positive perspective on procurement of funds sufficient for the project

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## Indispensable Institutional and Legal Elements

1. Land Value Assessment System
2. Immovable Assets Registration System (for land and building)
3. Governmental budgetary system to facilitate development of public facilities under a committed "Urban Master Plan"

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Thank you ...

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Intensive Learning Session on Urban Planning under Market Economy

## Participatory Planning for Intensive Learning Session

Tomoko Abe  
JICA Study Team  
2007/07/25

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The Study on City Master Plan and Urban Development Program of Ulaanbaatar City (UBMPS)  
Intensive Learning Session on Urban Planning under Market Economy

## Topics

1. Importance and Necessity of "Participatory Planning"
2. Visioning Approaches
  - > Step 1: Issue finding
  - > Step 2: Visioning
  - > Step 3: Planning
  - > Step 4: Taking actions
3. Introduction of Participatory Planning
4. Conclusion

2

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Intensive Learning Session on Urban Planning under Market Economy

## 1. Importance and Necessity of "Participatory Planning"

### What is "participatory planning"?



Town walking



Facilitation with participatory tools



Information tools  
(website, newsletter, etc.)



Discussion with residents



Interview survey

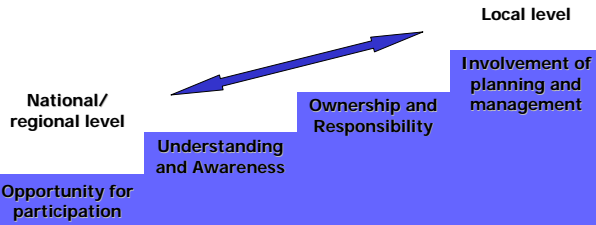
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### Why is the "participatory planning" necessary?

- To involve **main actors/ players** for urban planning
- To share the common "**Vision**" for future city
- To strengthen **empowerment** of people

> Need to define the levels of participation up to **objectives/ targets/ scales** of planning



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## 2. Visioning Approaches

### What is "Visioning"?

1) Issues

→

2) Vision



→

3) Plan


→

4) Action


"Where are we now?"



"Vision and goals"



"Where we want to be"



"How to get there?"

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### How can people be participated in the planning process?

1) Issues

→

2) Vision

→

3) Plan

→

4) Action

- 1) To identify and understand problems, constraints, values, and potentials
- 2) To share common image of city/ area (economically, socially, ecologically, culturally, aesthetically)
- 3) To develop future plans which embody visions/ images physically and visually
- 4) To identify feasible projects/ measures with time framework, financial capacity and human resources

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### Step 1: Issue finding

To identify and understand problems, constraints, values, and potentials

- (1) Secondary data (statistics, existing plans/ projects, reports)
- (2) Town watching (simple evaluation with "good-bad", "like-dislike", "preserve-improve" markings on map)
- (3) Interview (residents, government leaders, elderly/ children, academe)
- (4) Analysis and Evaluation

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### (4) Analysis and Evaluation

Subjective indicators	Objective indicators
<ul style="list-style-type: none"> <li>• Living condition</li> <li>• Economic condition</li> <li>• National condition</li> <li>• Transport</li> <li>• Townscape</li> <li>• Safety/ disaster prevention</li> <li>• Culture/ tradition</li> </ul>	<ul style="list-style-type: none"> <li>• Population</li> <li>• Urban/ housing development</li> <li>• Land use</li> <li>• Openspace/ greenery</li> <li>• Facility development (road, public transport, public/ commercial facilities, etc.)</li> </ul>

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### Example of participatory tools for "Issue finding"

Image map

"Photo voice" shooting photos by residents

Photo simulation

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### Step 2: Visioning

To share common image of city/ area (economically, socially, ecologically, culturally, aesthetically)

Regional scale	City scale	Local scale
<ul style="list-style-type: none"> <li>• Role of city in region</li> <li>• Integration of region</li> <li>• Distribution of population and urban function ...etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Image of city</li> <li>• Quality of life</li> <li>• Competitiveness</li> <li>• Environment ... etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Living condition/ housing</li> <li>• Social welfare</li> <li>• Convenience</li> <li>• Culture/ tradition ... etc.</li> </ul>

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### Examples of Visioning for Hanoi City Master Plan in Vietnam

**Vision**

*"Hanoi must be built as a modern and thriving capital city, symbolizing the whole country, and functioning as a national and regional center for policy, culture, science, technology, education, economy, and international trade." (Order No.1/ 2001/L-CTN)*

**Goals**

- To enhance the city's identity and image, which must be shared by the public.
- To ensure socio-cultural and natural environment sustainability.
- To ensure that socio-economic activities can be conveniently carried out and good living conditions can be experienced by all.

**Objectives**

- ◆ To boost industrialization, modernization, and international as well as regional integration.
- ◆ To promote economic, social, and cultural development in a comprehensive and sustainable manner.
- ◆ To stabilize local security and political conditions.
- ◆ To accelerate infrastructure and superstructure development.
- ◆ To improve the people's living conditions.

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### Basic Strategies

- Establish a spatial backbone comprising "water," "greeneries," and "culture."
- Develop public transportation-oriented urban areas.
- Upgrade and revitalize existing built-up areas in the urban core and fringes.
- Develop modern and competitive new urban centers to attract diversified quality investments
- Develop efficient infrastructure and services.
- Prepare effective disaster prevention measures.
- Strengthen institutions for effective and accountable urban management.

**Policies**

Hanoi's Role in Nation and Region	Housing and Living Conditions
Population and Urban Growth Management	Environment
Economic Development and Quality of Life	Urban Design and Landscape
Urban Water and Sanitation	Special Areas
Transportation	Implementation and Management

**People's Image of the Future Hanoi\***

\* Opinions of 20,000 household heads.

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### Step 3: Planning

To develop future plans which embody visions/ images physically and visually

- City: control of urbanization, land use, urban facilities, etc.
- District: land use, building use/ design, public facilities, etc.
- Local: color/ shape of buildings, commercial activities, community activities, etc.

Statutory urban planning system

Voluntary regulation

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### City level: Urban Planning Area

Urban Planning Area Boundary

Rural / Forest Area

Urbanization Control Area

Urban Growth Boundary

Urbanization Promotion Area

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### District Plan

- Land use
- Building designs
- Public facilities

District Plan of Mano Area, Kobe City

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### Planning of local/ community level

Shared Image: "Develop a attractive townscape with unified design and greenery."

Plans

- Control building height
- Prohibit segmentation of land
- Control building use except for low-rise houses
- Conserve green

Measures

- District plan
- Building agreement
- Voluntary regulations/ rules
- Agreement for green conservation
- Voluntary activities by community

Regulation of building height

Unified shop roofs

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### Step 4: Taking Actions

To identify feasible projects/ measures with time framework, financial capacity and human resources

Vision/ Plans

- Legal framework
- Finance
- Organization/ human resource
- Implementation schedule

Local level

- Community Based Organization
- Community fund
- Community leaders/ groups
- Short-mid-long term project lists
- Voluntary regulations
- Tax revenue
- Local governments
- Regular events
- NGOs
- Consultants/ experts
- Donation

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### 3. Introduction of Participatory Planning

– Ancient Quarter Pilot Project in Hanoi, Vietnam –

Net population density:

Ancient Quarter: 603per/ha

Average of Hanoi: 36per/ha

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### Basic Approaches of the Pilot Project

– Key aspects for sustainability –

- Cultural Sustainability
- Social Sustainability
- Economic Sustainability

- Residents
- Citizens of Hanoi
- National/ Global Communities

Proposal on Pilot Project to work out feasible sustainable development mechanism for short-term implementation

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### Project Flowchart

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### Participation of Stakeholders

- Consensus and support from stakeholders through
  - participation to **Stakeholder Meetings** for discussion, idea contribution, and common understanding
  - Participation to **Local Working Groups** for field surveys and **Focus Group Discussions** as requested
  - approval and support for **field survey** implementation
  - sharing information
- Some stakeholders directly participate in activities of the project
  - Communal authorities
  - Leaders of residents in the selected block
  - Residents

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### Field Survey and Planning by Local Working Group

Façade Photo Shooting

Dissatisfaction of living condition

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### "Photo Voice" survey for preservation of values

Photo shooting by residents

Photo Voice Exhibition

Commercial cultural space

Rural characteristics

Lifestyle and local practices

Awareness of origin

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### Proposed Vision of the Ancient Quarter

- Charm of Ancient Quarter is the best blended cultural, social and economic values which have been housed in exquisitely designed urban structure, creating unique urban life and street landscape/ environment.

*AQ will be the most significant traditional commercial and trade quarter enriched with exquisite blend of cultural, social, economic and living functions for the city as well as Vietnam*

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**Proposed Model Block Plan**

Hang Buom Street will be a traditional commercial street

Original tube houses will be renovated and preserved

Birdseye View of the Block

Inner courtyards provide better living conditions and community network.

Mid-rise buildings can be built away from streets

Proposed traditional facade streets

Quang Lac Theater is a traditional asset that needs to be revitalized

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**4. Conclusion**

- Significance of participation planning-
  - Raise a pride for area and community
  - Strengthen ownership and initiative for improvement for better living

Necessary supports

- **Participation opportunity** and various measures
- **Feasible solutions** for (physical) improvement
- **Technical and financial supports**

*How about the case in Ulaanbaatar??*

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## Economic Policy and Socio-economic Framework

Yoji Sakakibara  
JICA Study Team  
26 July 2007

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## Contents

- Review of current socio-economic condition
- Socio-economic framework setting: population and GRDP
- Economic policy and role of Central Gov and UB City Gov
- Questions and discussions

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## Current SE Conditions

- Population
  - Change of population, distribution by age, distribution by cities and aimags (districts), migration
  - Change of households and household membership
- Economy
  - GDP (GRDP), unemployment rate, inflation rate, interest rate, government budget, trade, investment, business enterprises

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## Adjustment of data

- Population data: gaps between Mongolian Statistical Yearbook (MSY) and Statistical Handbook Ulaanbaatar (SHU)
- Economic data: Revision of nominal GDP, investment, etc. from the result of the census of establishment 2006
- Change of base year for real GDP: from 1995 to 2000
- Some data has adjusted by study team

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## Population

- Change of population (121\_1, 121\_2)
- Distribution by age group (122)
- Distribution by cities and aimags (123\_1, 123\_2)
- Distribution by districts (123\_2)
- Migration (124\_1, 124\_2)
- Base: HIS (125)
- Percentage of UB: 39% in 2006
- Population pyramid: flat (from 1989 to 2000, from Mongolia to UB)
- Outside of UB: stop population growth
- Remote 3 districts: stop population growth
- Rapid in-migration from 2002 to 2004

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## Household

- Change of households and household membership (131)
- Distribution of household by cities and aimags (132)
- Percentage of UB: 36% in 2006
- Household size: 4.1 for national, 4.4 for UB
- Remote 3 districts: stop household growth

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## GDP

- Change of GDP (GRDP) and GDP (GRDP) per capita (141\_1)
- Distribution by cities and aimags (141\_2)
- Distribution by industries (141\_3\_1, 141\_3\_2, 141\_3\_2)
- Distribution from demand side (141\_4)
- UB City: lower GDP GR and GDP per capita GR than Mongolia
- 55% of national GDP
- Dominant tertiary sector: Mongolia and UB
- Decrease primary industry in national level

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## Price, money and interest rate

- Change of CPI and GDP deflator (142\_1, 142\_2)
- Money supply (142\_3)
- Interest rates (142\_4)
- CPI: decreasing but GDP deflator still high level (hike of copper, gold)
- Rapid increase of M2 (process of credit creation)

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## Government budget

- Revenue and expenditure of General Gov (143\_1)
- Revenue and expenditure of Central Gov (143\_2)
- Revenue and expenditure of Local Gov (143\_3, 143\_4)
- Transfer from Local Govs to Central Gov (143\_5)
- Tax: 80% of total revenue (General, Central and Local)
- Capital expenditure: 13-16% of total expenditure
- UB City: 44% of Local Gov budget
- Transfer from UB City to Central Gov (Tg14 billion in 2006)

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## Employment and unemployment

- Employment (144\_1)
- Employment by industries (144\_2)
- Economically active population by region (144\_3)
- Employees by region (144\_4)
- Unemployment rate: more than 30% in remote districts in UB
- Garment industry: 30,000 workers to 5,000 workers
- Agriculture and Trading: absorb employment

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## International trade

- Export and import (145\_1)
- Balance of payments (145\_2)
- Export: Copper (41.2%), and Gold (17.5%)
- Import: Mineral fuels, Machinery and transport equip, Manufactured goods
- Position of transfer: Overseas workers

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## Investment

- Investment by categories and financial sources (146\_1)
- FDI by industries (146\_2)
- FDI by origin countries (146\_3)
- Companies with foreign investment (146\_4)
- FDI: mining and trade industries
- Investment from China and Canada (mining)
- Trading industry: small-scale investment

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## Business enterprises

- Establishments by regions (147\_1)
- Establishments by industries (147\_2)
- Active est's by regions (147\_3)
- Active est's by industries (147\_3)
- 61.3% of active est's in UB City
- Trading, community service, manufacturing
- Same trend in UB city statistics
- Necessity of cross data analysis

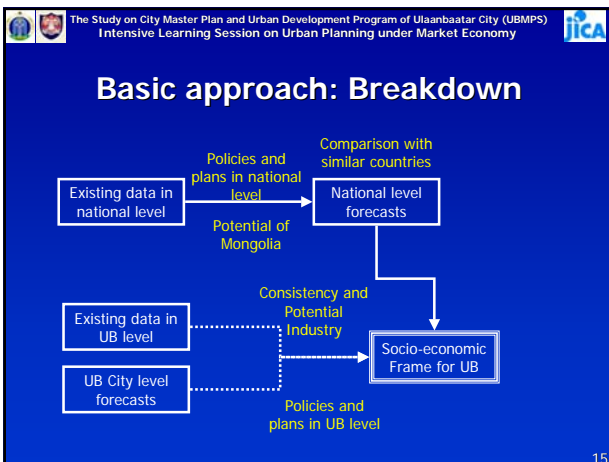
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## Socio-economic framework setting

- Population
  - Existing population forecast
  - Regression analysis
  - Simulation
- GRDP
  - Existing Economic Development Target
  - Examination of NDS and IMF
  - Assessment of Economy in Mongolia
  - Economic Growth Scenario for Mongolia

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## Existing population forecast (Mongolia): NSO-UNFPA

	2000	2005	2010	2015	2020	2025
High	2,390	2,573	2,764	2,966	3,160	3,330
Med	2,390	2,562	2,742	2,919	3,087	3,230
Low	2,390	2,552	2,720	2,884	3,039	3,168

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## Existing population forecast (UB)

	2005	2010	2015	2020	Annual GR
NSO UNFPA	894.3	1,019.3	1,141.2	1,253.5	2.3%
MP 2020	890.0	1,135.0	-	1,650.0	4.2%
MP 2015	942.4	1,093.4	1,164.7	-	2.0%

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## Assessment of population forecast

- Population Forecast by NSO and UNFPA: follows actual population but underestimate for UB.
- MP 2020: Consider carrying capacity but not consider national-level
- MP 2015: breakdown from NSO and UNFPA, and examine migration from viewpoint of economic target, industrial policy and environment capacity

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### Methodology of regression analysis

- Utilize NSO-UNFPA forecast: Breakdown from national population
- Examine effect of migration: Higher GRDP Rate than National GDP

$$P_{ub} = 0.190953x P_{mon} + 0.000632 x GGR_{ub}$$

(11.55155) (9.820441)

Adjusted R<sup>2</sup>=0.833063 (212)

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### Simulation of population

- Use of Medium Scenario of NSO-UNFPA
- GRDP GR in UB:  
7.5% (2007-11), 5.1% (2012-26)

	07	10	20	GR
Mongolia	2,623	2,742	3,080	1.1
UB City	1,043	1,195	1,719	3.9
% UB	39.6	43.6	55.7	

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### Economic development target

	Middle-term Target	Long-term Target
MDG based NDS	14 (2007-15)	Not less than 12 (2015-21)
IMF	7.5 (2006-11)	5.1 (2012-26)
MP2020 (UB)	Arrive at 9.0% until 2010	Arrive at 10.5% until 2020
MP2015 (UB)	Arrive at 7.5% until 2010	Arrive at 7.7% until 2015

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### Assessment of economy

- Mining: Contribute to export but limited effect on GDP growth and employment
- Trading, construction and construction-related: Booming but not lead economic development in longer-term
- Employment: agriculture and trading industries
- Manufacturing: Limited development

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### Contribution of GDP growth

Year	Total GDP Growth
2003	6.0%
2004	10.8%
2005	7.1%
2006	8.4%

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### Situation of other countries

- Asian countries: from Primary sector to Secondary sector Experience more than 7% growth more than 10 years (214\_1)
- Central Asia countries: Slump in 1990s, Boost in 2000's (Kazakhstan, Tajikistan, 214\_2)
- Gulf countries: fluctuation, average 4-7%, continuous growth in UAE (214\_3)

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## Alternative economic development scenarios for Mongolia

Mongolia: Start sustainable economic dev

Which type dev scenario?

- Scenario A1 Kazakhstan model: Economic dev by raw material export
- Scenario A2 UAE model: Sustainable dev from raw material export to tertiary industry
- Scenario B Malaysia type: Sustainable dev from raw material export to secondary industry

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## Economic policy and role of Central Gov and UB City Gov

- Economic policy
- Key leading industry for UB City
- Roles of Central Gov and UB City Gov
- Basic principles for economic policy

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## Economic policy

- Secure economic stability: low unemployment rate, low **real** inflation rate through fiscal and monetary policy
- Framework setting (laws and regulations) for economic activities: banking, accounting, bill market, taxation
- Incentives, deregulation and regulations for potential industries (tax exemption, subsidies, etc)**
- Human resource development

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## Viewpoints to examine potential leading industries for Mongolia

Limited scale of domestic market  
High cost due to landlocked country

- Not import substitution but export oriented
- Unique and representative products
- Resources within country (raw material, HR)
- Use of economic benefit from mining industry

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## Potential leading industries for UB

- Tourism: Use natural and historical resource; foreign currency earnings; employment
- Support industries for mining industries: Use booming and promising industry for Mongolia
- Processing of cassimere, leather, wood: Use specific resource of Mongolia; employment
- ICT and Business Process Outsourcing: Use human resource; foreign currency earnings; expect rapid outcome

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## Leading industries and economic policy

Leading industries	Other industries
<ul style="list-style-type: none"> <li>Support industries for mining</li> <li>Leather, cashmere</li> <li>Tourism</li> <li>ICT and BPO</li> </ul>	<ul style="list-style-type: none"> <li>Trading</li> <li>Construction</li> <li>Construction material</li> <li>Others</li> </ul>

Gov support  
• Incentives  
• Deregulation, etc.

Neutral position  
• Price mechanism  
• Environment reg

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### Supporting industry for mining

- Mining industry: 12% of GDP; 60% of export; 4% of labor force
- Main products: Copper (41% of export) and Gold (18%)
- Site: Erdenet, South Gobi
- Role of UB: supporting activities (administration, insurance, finance, transportation, spare parts production)
- Necessity of needs assessment

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### Processing: Cassimere, Leather

- Abundant material from rural area
- Employment generation
- Development as souvenir to tourists and export goods
- Lack of material: outflow of raw materials to China
- Lack of capital, high bank loan rate
- Technological & Industrial Park or relocation

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### Tourism

- Arrivals: 158,000 in 2000 to 395,000 in 2006
- 12 nights in Mongolia, Spend US\$106 per day
- 3 nights in UB
- Seasonality: Winter tour in UB, winter resort
- Enhancement of gateway function of UB
- Development of tourist sites and tour route
- Quality improvement of tourist services
- Conservation: landscape of downtown, Bogd Khaan Mountain, etc

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### ICT and Business Process Outsourcing

- ICT companies: 30 companies in MOSA and 5-6 companies for BPO
- Support from CCIC and AOTS (Japan)
- MP will be prepared by ICT Agency
- From 3,000 engineers in 2007 to 20,000 engineers (15,000 for BPO) in 2015
- Need of support for technical education and tax incentives
- Rich human resource, ability of foreign language and mathematics

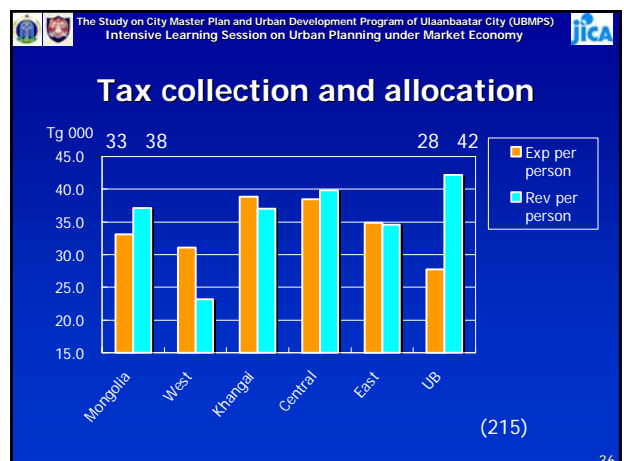
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### Roles of Central Gov and UB City Gov

- Central Gov: responsible for all items mentioned in the previous slide
- UB City Gov: complement roles of Central Gov, concentrate specific industry and enterprises in UB City
- Need to coordinate with allocation of budget between Central Gov and Local Gov

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## Basic principles for economic policy

- Though price mechanism: private companies never respond from gov's enforcement
- Balance of budget allocation and public service between Central Gov and Local Gov



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## Intensive Learning Session on “Transport Planning and Demand Forecasting”

2007.07.26  
Akira Hosomi, Dr. Eng

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3. Transport Demand Forecasting Method
4. JICA STRADA for Demand Forecasting
5. Practice using UB road network

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## 1. Transport Planning Procedure

- Transport planning should be subject to facts scientifically examined, and it should be followed by a proper procedure in a logical way without any influence of politics.
- The reasonable methodology for transport planning and demand forecasting system are needed for formulating better M/P.

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## 1. Transport Planning Procedure

- Typical procedure for transport planning

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## 2. Transport Surveys

- Household Interview Survey (HIS)  
Household Interview Survey, person trip survey in other words, is conducted..
  - to obtain a basic data for formulating comprehensive transport plan
  - to acquire information on the one-day travel characteristics of the residents in the study area as well as socio-economic aspects

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## 2. Transport Surveys

- Household Interview Survey (HIS)
  - Trip Information – description of trips made in a day
    - Origin and Destination
    - Trip purpose
    - Travel time and cost
    - Transport mode choice
    - Parking

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## 2. Transport Surveys

- Household Interview Survey (HIS)
  - Household information
    - Socio-economic profile
      - income, assets, etc..
    - Vehicle ownership
  - Personal information of household member
    - Socio-economic profile
      - income, filed of employment, etc..
    - State of mobility
    - Working/school conditions
      - working/school hours, location, etc.

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## 2. Transport Surveys

- Household Interview Survey (HIS) in UBMPS
  - Sample size
    - 4,500 households (2% of total households of the city)
    - Head of each family and all members over 6 years old
  - Sampling Method
    - Random sampling survey method (2% of population from each khoroo)
  - Methods of Data Collection
    - The survey was carried out by university students, getting assistance from social workers and administrative officers of Khorooos, and section leaders of Khorooos/ apartment leaders in the field.

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## 2. Transport Surveys

- Household Interview Survey (HIS) in UBMPS
  - Vehicle Ownership by Household (2,000 sample only)

Category	No vehicles	1	2	3	4	5+
All	78%	18%	2%	2%	0%	0%
Apartment	72%	25%	1%	0%	0%	0%
Ger Area	82%	15%	1%	0%	0%	0%

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## 2. Transport Surveys

- Household Interview Survey (HIS) in UBMPS
  - Driver's License (2,000 sample only)

Category	Motorcycle only (A)	Car and small truck (B)	Big truck (C)	Bus (D)	All vehicles (E)	None
All	10%	10%	5%	5%	10%	55%
Apartment	15%	15%	5%	5%	10%	45%
Ger Area	10%	10%	5%	5%	10%	55%

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## 2. Transport Surveys

- Household Interview Survey (HIS) in UBMPS
  - Vehicle Ownership by Individuals (2,000 sample only)

Vehicle Type	Ger Area	Apartment	All
Car	5%	14%	8%
Truck	2%	2%	2%
Bicycle	1%	1%	1%
Microbus	0.5%	0.5%	0.5%
Motorcycle	0.5%	0.5%	0.5%

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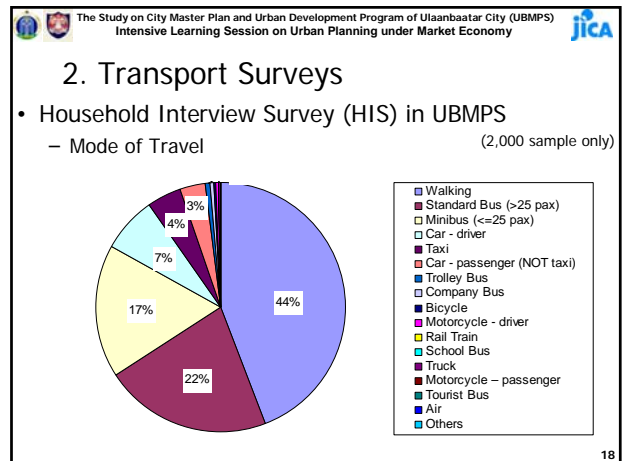
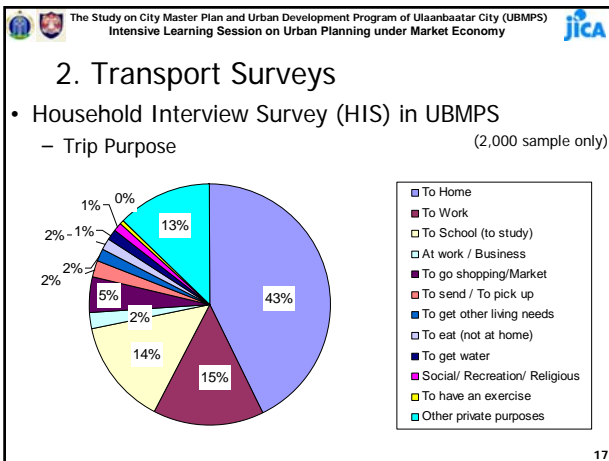
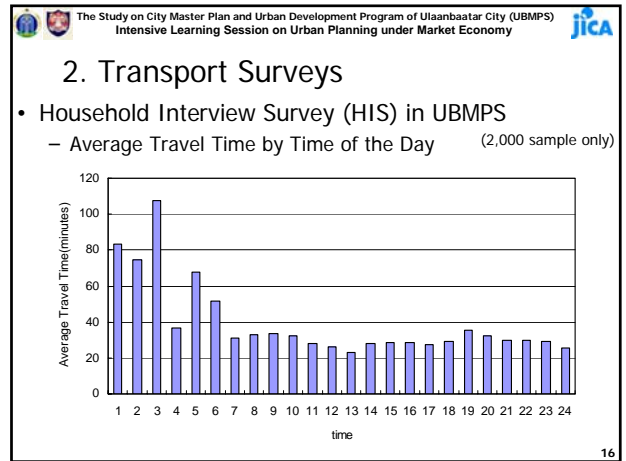
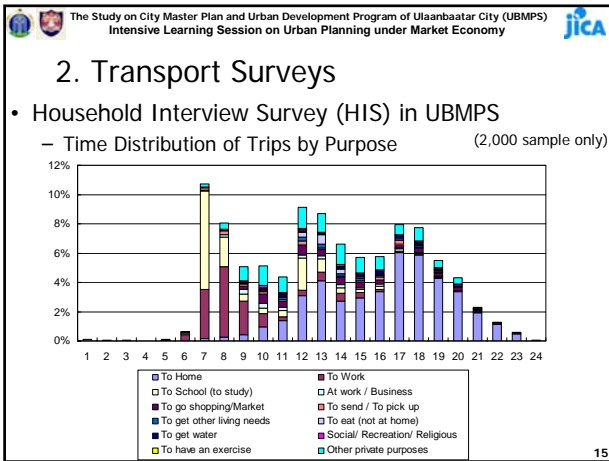
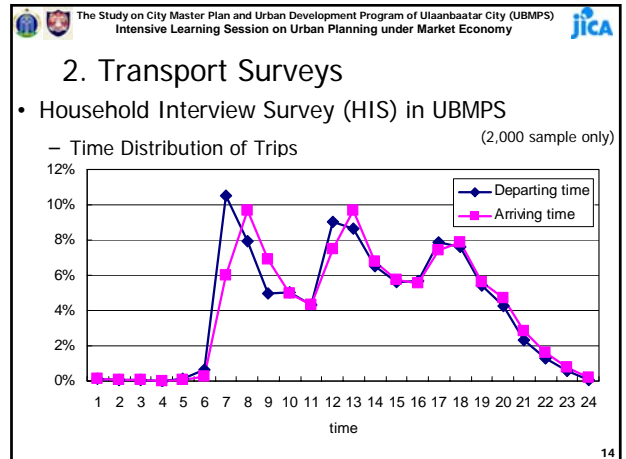
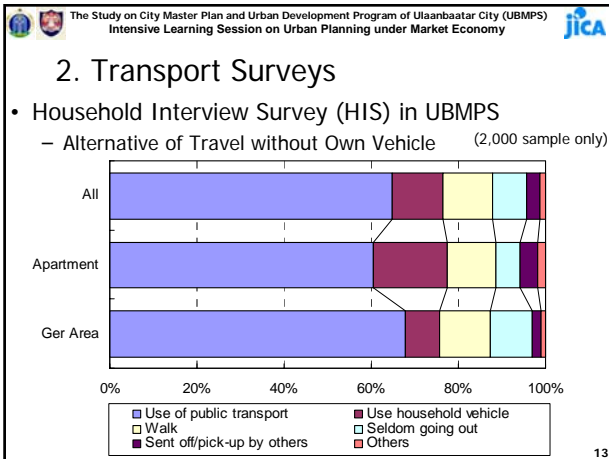
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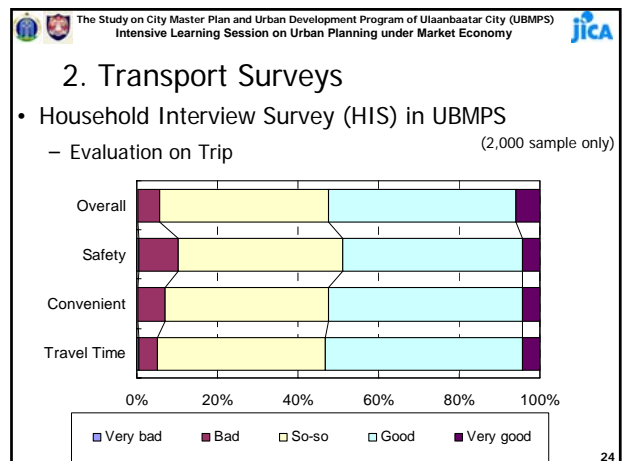
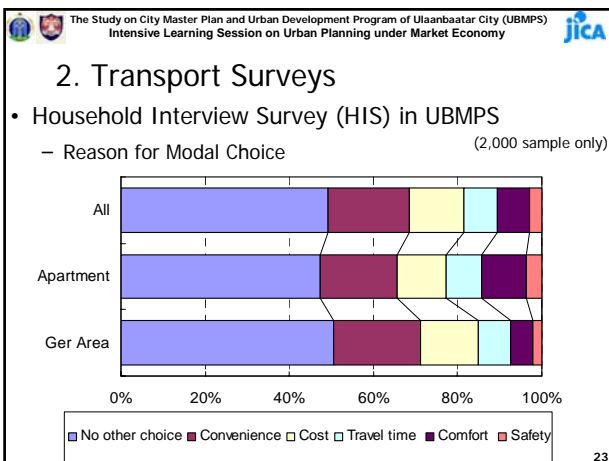
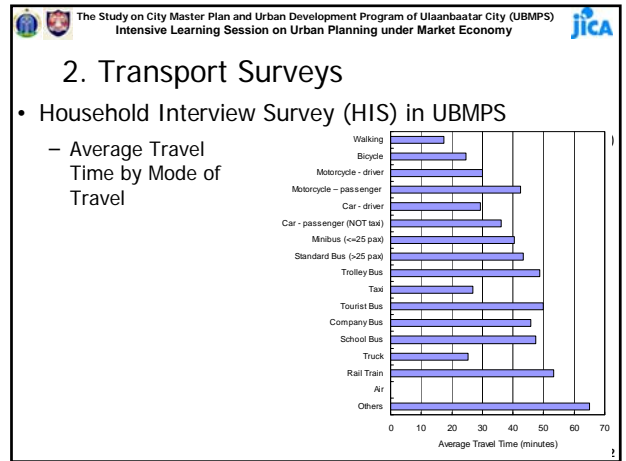
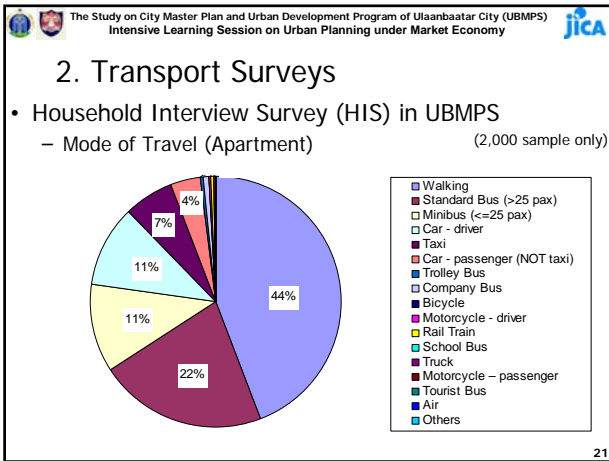
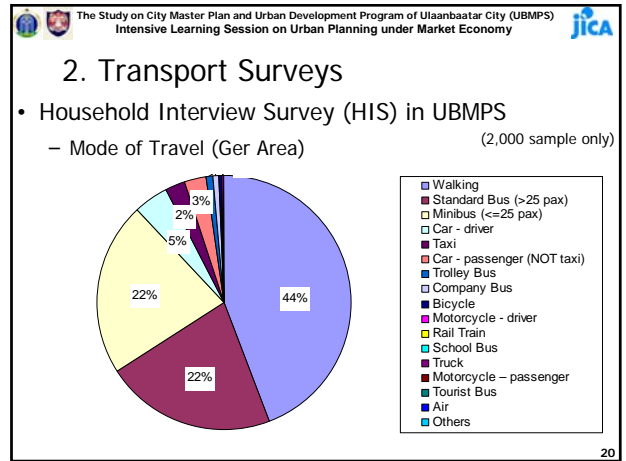
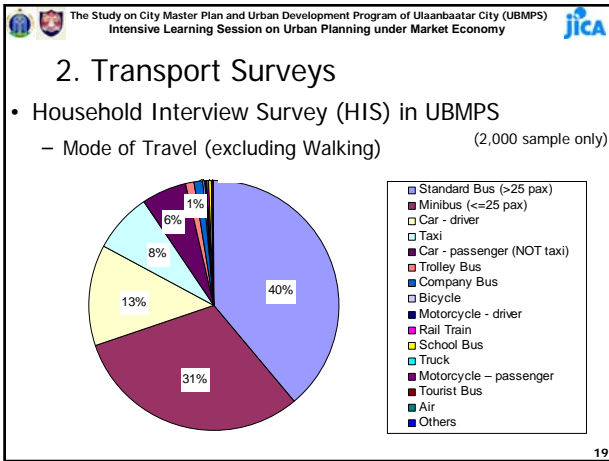
## 2. Transport Surveys

- Household Interview Survey (HIS) in UBMPS
  - Ownership of Public Transport Discount Card (2,000 sample only)

Category	Yes	No
All	15%	85%
Apartment	15%	85%
Ger Area	15%	85%

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## 2. Transport Surveys

- Household Interview Survey (HIS) in UBMPs
  - Evaluation on Trip by Mode – Overall –

(2,000 sample only)

Legend: Very bad, Bad, So-so, Good, Very good

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## 2. Transport Surveys

- Traffic Surveys

	Method
<b>Cordon Line Survey</b>	- To understand the traffic behaviors of the residents who live in the outside of the study area - Traffic volume count by directions - Origin and destination interview for drivers/passengers at stations
<b>Screen Line Survey</b>	- To get information for adjustment of OD matrix taken by HIS as well as to obtain the load factors for each mode of transport - Traffic Count by directions - No. of Passengers by ocular measurement
<b>Traffic Count Survey / Intersection Traffic Count Survey</b>	- To get information for calibrating forecasting model - Traffic Count by directions
<b>Travel Speed Survey</b>	- To get information for calibrating forecasting mode - Travel Speeds Measurement for certain routes(roads) by modes

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## 2. Transport Surveys

- Traffic Surveys in UBMPs
  - Location of Cordon Line Survey

TC and OD Interview were also conducted at

- Railway Station (UB Central Station)
- Chinggis Khaan International Airport

Cordon Line Survey Points (only roadside survey points)

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## 2. Transport Surveys

- Traffic Surveys in UBMPs
  - Result of Cordon Line Survey

No.	Survey Station (Boundary)	Time	Traffic Volume
		Hours	Vehicles
CL-1	Ulaanbaatar - Darkhan	24	2,161
CL-2	Ulaanbaatar - Lun	24	1,138
CL-3	Ulaanbaatar - Altanbulag	16	77
CL-4	Ulaanbaatar - Dundgobi	16	46
CL-5	Ulaanbaatar - Zuunmod	16	1,190
CL-6	Ulaanbaatar-Choir	24	553
CL-7	Ulaanbaatar-Khentii	24	992
CL-8	Ulaanbaatar-Terej	16	542
CL-9	Ulaanbaatar-Rashaant	16	102
CL-10	Railway Station (UB Central Station)	24	4,293
CL-11	Chinggis Khaan International Airport	24	3,808

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## 2. Transport Surveys

- Traffic Surveys in UBMPs
  - Location of Screen Line Survey

Screen Line Survey: 3-day Continuous TC at 10

Screen Line Survey Point

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## 2. Transport Surveys

- Traffic Surveys in UBMPs
  - Result of Screen Line Survey

Unit: Veh./16 Hrs

East-West	SL-1	5,834
	SL-2	44,076
	SL-3	33,456
	SL-4	48,635
	SL-5	50,843
	Sub-total	182,843
North-South	SL-6	20,238
	SL-7	41,470
	SL-8	27,116
	SL-9	20,824
	SL-10	12,878
	Sub-total	122,527
Total		305,370

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## 2. Transport Surveys

- Traffic Surveys in UBMPs
  - Cross Section Traffic Count Survey

Unit: Veh./16 Hrs

TC-1	19,342
TC-2	3,559
TC-3	10,577
TC-4	16,999
TC-5	37,502
TC-6	20,964
TC-7	40,538
TC-8	54,495
TC-9	19,404
TC-10	18,758
TC-11	9,726
TC-12	27,110

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## 2. Transport Surveys

- Traffic Surveys in UBMPs
  - Traffic Comparison between 1998 and 2007

2008 - Total Number of Vehicles per 16 hours

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## 2. Transport Surveys

- Traffic Surveys in UBMPs
  - Traffic Comparison between 1998 and 2007

2008 - Total Number of Vehicles per 16 hours

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## 2. Transport Surveys

- Traffic Surveys in UBMPs
  - Travel Speed Comparison between 1998 and 2007

Vehicle Type	Route	Direction	Travel Speed	
			1998	2007
CAR	Peace Avenue	East	41.4	25.4
		West	42.4	25.7
	Khuvsgalchid - Ikh Toiruu	East	30.3	21.3
		West	29	20.9
	Ikh Toiruu	South	40.9	19.1
		North	42.5	20.3
Naryn Zam	East	42.3	31.7	
	West	41.2	19.7	
BUS	UBIS - Yarmag	East	35.7	21.4
		West	31.9	20.1
	UBIS - Chingeltei	East	24.1	16.8
		West	24.1	18

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## 3. Transport Demand Forecasting Method

- 4 STEPS METHOD

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## 3. Transport Demand Forecasting Method

- 4 STEPS METHOD

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### 3. Transport Demand Forecasting Method

- Data Processing from Cordon Line Survey

(2) Expansion of Trip Information

$$D_{ij}^k = d_{m-ij}^k \cdot e_m^k$$

$D_{ij}^k$  No. of trips from zone  $i$  to  $j$  by category  $k$  at station  $m(i \neq j)$   
 $d_{m-ij}^k$  No. of observed trips by sampled from zone  $i$  to  $j$  by category  $k$  at station  $m(i \neq j)$

---

e.g. No. of observed trips by sampled (/day)      Zone 324 → Zone 027      15  
 Purpose: to work  
 Mode: Car

➡ No. of trips      132

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### 3. Transport Demand Forecasting Method

- Data Processing from Cordon Line Survey

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### 3. Transport Demand Forecasting Method

- Data Processing from Cordon Line Survey

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### 3. Transport Demand Forecasting Method

- Data Processing from Screen Line Survey

(1) Categorization of OD trip

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### 3. Transport Demand Forecasting Method

- Data Processing from Screen Line Survey

(2) Calculation of 'Adjustment Rate'

$$a^k = \frac{\sum_i \sum_j D_{ij}^k \cdot p^k}{\sum_m T_m^k}$$

$a^k$  Adjustment rate (for category  $k$ )  
 $p^k$  Average number of passengers (for category  $k$ )

---

e.g. Total OD categorized as      Car: 1,468,321

Total Traffic volume categorized as      Car: 1,543,231

➡ Expansion rate for      Car: 0.95

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### 3. Transport Demand Forecasting Method

- Data Processing from Screen Line Survey

(3) Adjustment of Number of Trips

$$\hat{D}_{ij}^k = \frac{D_{ij}^k}{a^k}$$

$\hat{D}_{ij}^k$  Adjusted No. of trips from zone  $i$  to  $j$  by category  $k$  ( $i \neq j$ )

---

e.g. No. of observed trips by sampled (/day)      Zone 018 → Zone 027      14,514  
 Purpose: to work  
 Mode: Car

➡ Adjusted No. of trips      15,278

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### 3. Transport Demand Forecasting Method

- Zoning System on UBMPs

120 Zones in 6 districts

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### 3. Transport Demand Forecasting Method

- Traffic Assignment
  - Building network
    - Travel speed
    - Link capacity
    - QV function
  - Passenger trips are converted to vehicle trips
    - Average occupancy
    - PCU factor by mode
  - Vehicle trips are assigned on the network
    - Several assignment techniques

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### 3. Transport Demand Forecasting Method

- Road Network on UBMPs

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### 3. Transport Demand Forecasting Method

- Road Network on UBMPs

Name	Length	Lane/Width	Carriage/Way	Surface	Class	Cap.	Speed	Construction Year
0001	0.192228	14.75	F		1	40,000	40	1949
0002	0.319605	14.75	F		1	40,000	40	1949
0003	0.324719	14.75	F		1	40,000	40	1959
0004	0.126520	12.40	F		2	26,725	40	1949
0005	0.357112	12.40	F		2	26,725	40	1949
0006	0.19884	14.75	F		1	40,000	40	1949
0007	0.198252	7.25	F		2	15,588	30	1942
0008	0.154914	12.40	F		2	26,725	40	1949
0009	0.19821	14.75	F		1	40,000	40	1959
0010	0.151547	7.25	F		2	15,588	30	1942
0011	0.214956	12.40	F		2	26,725	40	1949
0012	0.126488	12.40	F		2	15,588	30	1942
0013	0.307177	12.40	F		2	26,725	40	1949
0014	0.158957	12.40	F		2	26,725	40	1949
0015	0.246493	14.75	F		1	40,000	40	1949
0016	0.211275	12.40	F		2	26,725	40	1949
0017	0.226415	12.40	F		2	26,725	40	1949
0018	0.244495	15.40	F		2	37,125	40	1949
0019	0.257564	14.40	F		2	31,188	40	1949
0020	0.476167	14.75	F		1	40,000	40	1959
0021	0.248750	14.75	F		1	40,000	40	1959
0022	0.144420	7.25	F		2	14,175	20	1942
0023	0.099508	14.75	F		1	40,000	40	1949
0024	0.089191	14.40	F		2	19,525	30	1949

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### 3. Transport Demand Forecasting Method

- Road Capacity

Class	Urban/Rural	Vmax	Carriageway		No. of Lanes	Cross Section (max)	Fixed	perm	Qmax/hour			Qmax/day		
			Mn.	Mx.					Service Level 1	Service Level 2	Service Level 3	Service Level 1	Service Level 2	Service Level 3
Car Exclusive	Urban	80			2			1,300	1,400	1,600	16,200	17,500	20,000	
		100			4			2,600	2,800	3,200	32,400	35,000	40,000	
		100			6			2,200	2,400	2,800	28,000	30,000	34,000	
	Rural	80			2			1,000	1,100	1,300	13,000	14,000	16,000	
		80	<6m		2			1,700	1,800	2,100	21,000	22,000	26,000	
		80	<6m		2			1,700	1,800	2,100	21,000	22,000	26,000	
Primary	Urban	35	<6m		2	3m		2,500	2,500	2,500	25,000	25,000	25,000	
		35	<12m	2+g	3.5x2.5m	2,500	250	1,300	1,400	1,600	16,200	17,500	20,000	
		40	<12m	4+g	3.5x3.5x2.0m	2,200	300	4,500	4,100	4,600	46,000	50,000	57,000	
		45	21m	<28m	6	3.5x3.5x3.5x2.0	2,200	300	6,800	7,800	8,400	85,000	95,000	105,000
		50	28m	<36m	8	3.5x3.5x3.5x3.5x2.0	2,200	300	9,000	10,100	11,300	112,000	126,250	141,250
		55	<28m	2	3m	2,500			1,700	1,900	2,300	17,000	19,000	23,000
	Rural	45	<6m		2			2,500	2,500	2,500	25,000	25,000	25,000	
		45	7m	<12m	2+g	3.5x2.5m	2,500	250	1,700	1,900	2,300	17,000	19,000	23,000
		50	<12m	<20m	4+g	3.5x3.5x2.0m	2,200	300	5,900	6,700	7,500	75,000	87,000	99,000
		55	21m	<28m	6	3.5x3.5x3.5x2.0	2,200	300	8,900	10,100	11,300	113,000	126,250	141,250
		60	28m	<36m	8	3.5x3.5x3.5x3.5x2.0	2,200	300	11,900	13,500	15,100	151,000	168,000	188,000
		60	<6m		2	3m	2,500		1,100	1,300	1,600	16,200	17,500	20,000
Secondary	Urban	35	<6m		2			2,500	2,500	2,500	25,000	25,000	25,000	
		35	7m	<12m	2+g	3.5x2.5m	2,500	200	1,100	1,300	1,600	13,750	15,000	17,500
		40	<12m	<20m	4+g	3.5x3.5x2.0m	2,200	220	3,900	4,400	4,900	49,000	53,000	61,250
		45	21m	<28m	6	3.5x3.5x3.5x2.0	2,200	220	5,900	6,700	7,400	73,750	83,750	92,500
		50	28m	<36m	8	3.5x3.5x3.5x3.5x2.0	2,200	220	7,900	8,900	9,900	98,750	111,250	123,750
		55	<28m	2	3m	2,500			1,300	1,500	1,800	18,000	20,000	24,000
	Rural	45	<6m		2			2,500	2,500	2,500	25,000	25,000	25,000	
		45	7m	<12m	2+g	3.5x2.5m	2,500	200	1,300	1,500	1,800	18,000	20,000	24,000
		50	<12m	<20m	4+g	3.5x3.5x2.0m	2,200	220	4,400	5,200	6,000	60,000	66,000	74,000
		55	21m	<28m	6	3.5x3.5x3.5x2.0	2,200	220	6,900	7,800	8,700	87,000	97,000	109,000
		60	28m	<36m	8	3.5x3.5x3.5x3.5x2.0	2,200	220	9,200	10,500	12,000	120,000	133,000	149,000
		60	<6m		2	3m	2,500		1,100	1,300	1,600	16,200	17,500	20,000
Tertiary	Urban	30	<6m		2			1,100	1,300	1,600	16,200	17,500	20,000	
		30	7m	<12m	2+g	3x2.5m	2,500	200	1,100	1,300	1,600	13,750	15,000	17,500
		35	<20m	4+g	3.5x3.5x2.0m	2,200	200	3,900	4,400	4,900	47,000	51,750	60,000	
	Rural	30	<6m		2			900	1,100	1,300	9,000	11,000	13,000	
		40	7m	<12m	2+g	3.5x2.5m	2,500	200	900	1,100	1,300	9,000	11,000	13,000
		45	<20m	4+g	3.5x3.5x2.0m	2,200	200	3,300	3,700	4,200	33,000	37,000	44,000	

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### 3. Transport Demand Forecasting Method

- Assignment Technique
  - Incremental Assignment
    - OD trips are divided n times and assigned on shortest route. Shortest route is searched at each time according to travel time calculated by QV function
  - Diversion Rate Assignment
    - Network includes toll road, two shortest routes w or w/o toll road are searched and diversion between those two are calculated
  - Equilibrium Assignment
    - Equilibrium situation on a network is calculated reflecting that road users select optimal travel route

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### 3. Transport Demand Forecasting Method

- Assignment Technique

QV Function

V: Travel Speed

Q: Traffic Volume

Link Performance Function

t: Travel Time

C: Traffic Volume

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### 3. Transport Demand Forecasting Method

- Assignment Technique
  - Incremental and equilibrium using QV function are not so different but theoretically, BPR function should be used for the equilibrium assignment
  - Both parameters for BPR function (USA parameter and Dutch parameter) have not been examined yet in the Mongolian situation and it is considered that Original parameters should be needed aside from these known parameters.

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### 3. Transport Demand Forecasting Method

- Evaluation
  - Network Performance
    - Volume Capacity Ratio (V/C R)
    - Average Speed
    - Vehicle (PCU) – KM
    - Vehicle (PCU) - Hour
  - Economic Indices: Direct Impact
    - Vehicle Operating Cost (VOC)
    - Travel Time Cost (TTC)
    - Comparison of "With" case and "Without case"
  - Economic Indices: Indirect Impact
    - Loss by Accident / Injury and Death
    - Air Pollution / Noise

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### 3. Transport Demand Forecasting Method

- (配分結果)

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### 3. Transport Demand Forecasting Method

- Modeling for Future Traffic Demand:
  - Trip Generation/Attraction
    - Estimates of daily trip generation and attraction by traffic zone
    - Generation  $G_i = a^1 x_i^1 + a^2 x_i^2 + a^3 x_i^3 + c$  Population, No. of Workers, Students...
    - Attraction  $A_j = a^1 x_j^1 + a^2 x_j^2 + a^3 x_j^3 + c$
  - Trip generation/attraction by household group
    - Different tendency of modal choice by vehicle ownership can be reflected.
    - Target of potential demand in public transport will be clear.

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### 3. Transport Demand Forecasting Method

- Modeling for Future Traffic Demand:
  - Trip Distribution
    - Intra-zonal Model (Present Pattern)
 
$$T_{ii} = R_i G_i$$
    - Inter-zonal Model (Gravity Type)
 
$$T_{ij} = k \frac{G_i^\alpha A_j^\beta}{d_{ij}^\gamma}$$

Comparison of Trip Distribution

Comparison of Trip Length Distribution

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### 3. Transport Demand Forecasting Method

- Modeling for Future Traffic Demand:
  - Modal Choice
    - Disaggregated Logit Model

$$P_{ij}^{rs} = \frac{\exp(V_{ij}^{rs})}{\sum_{rs' \in \Omega} \exp(V_{ij}^{rs'})}$$

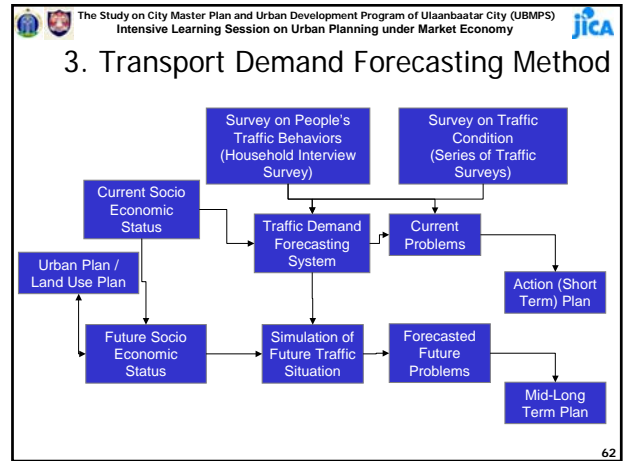
$$T_{ij}^r = P_{ij}^r T_{ij}$$

$$V_{ij}^{rs} = \alpha_h h^{rs} + \alpha_d d^{rs} + \alpha_{t_{ij}} t_{ij} + \alpha_o p_{ij}$$

Travel Time, Travel Cost, Vehicle Ownership, etc.

Observed (case of HCMC)      Estimated (case of HCMC)

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### 4. JICA STRADA for Demand Forecasting

- What is "JICA STRADA"?
  - JICA STRADA is a computer software developed by JICA for application in transport demand analysis and assignment. It is an abbreviation of "System for TRAFFIC Demand Analysis".
  - This software has been adopted among the world cities such as...
    - Metro Manila (Philippines: 1999, 2002, 2005)
    - Hanoi (Vietnam: 2005)
    - Lima (Peru: 2004)
    - Ho Chi Minh City (Vietnam: 2004)
    - Nairobi (Kenya: 2004)
    - Jakarta (Indonesia: 2003)
    - Cairo (Egypt: 2002)
    - ...etc.

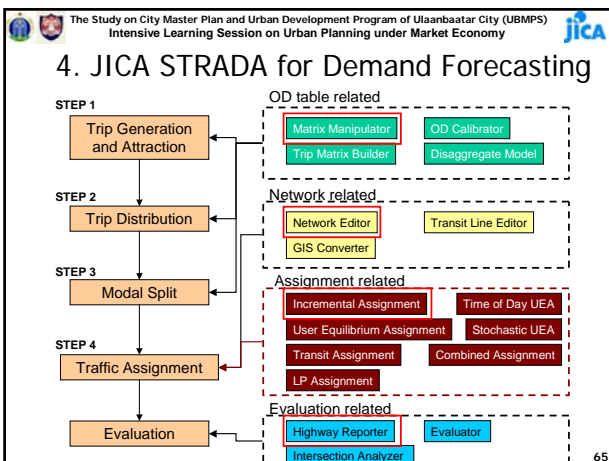
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### 4. JICA STRADA for Demand Forecasting

- What is "JICA STRADA"?
  - It is composed of 17 sub-programs:
    - Trip Matrix Builder
    - Disaggregate Model
    - OD Calibrator
    - Matrix Manipulator
    - GIS Converter
    - Network Editor
    - Transit Line Editor
    - Incremental Assignment
    - User Equilibrium Assignment
    - Stochastic User Equilibrium Assignment (UEA)
    - Transit Assignment
    - Time of Day UEA
    - Combined Model Split and Assignment Model
    - LP Assignment
    - Highway Reporter
    - Intersection Analyzer
    - Evaluator

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### 4. JICA STRADA for Demand Forecasting

- Matrix Manipulator
  - Handling OD matrices
  - Tables of zonal indices and GA trips
  - Graphic display from matrices

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#### 4. JICA STRADA for Demand Forecasting

- Network Editor
  - Editing Network File
  - Specifying Parameters

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#### 4. JICA STRADA for Demand Forecasting

- Incremental Assignment
  - Traffic Demand Assignment by Incremental Approach

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#### 4. JICA STRADA for Demand Forecasting

- Highway Reporter
  - Showing link assignment results
  - Calculation of Evaluation Indices
  - Showing some other information such as..
    - Interzonal Impedance
    - Directional Flow at Intersection
    - Route Information
    - Link OD Details
    - Transit Assignment Result

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#### 5. Practice using UB road network

- (1) Consider the necessary projects in 2010 and 2020 respectively based on the result of traffic assignment.
- (2) Make an evaluation report of the projects which you proposed at (1).

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# Land Use Plan and Land Management

Hiroaki Ohashi  
JICA Study Team

## Today's Agenda

- National Land Use Plan (National, Prefectural, & Municipal-Level Plans) in Japan
- General Land Use Plan (Prefectural Level) in Japan
- Land Use Planning and Regulations in City Planning Area (Municipal Level) in Japan
- Introduction of Preparation Procedure of Land Use Planning (Municipal Level) in Japan

## Characteristics of National Land in Japan

**Total Land Area**  
37,780,000 ha

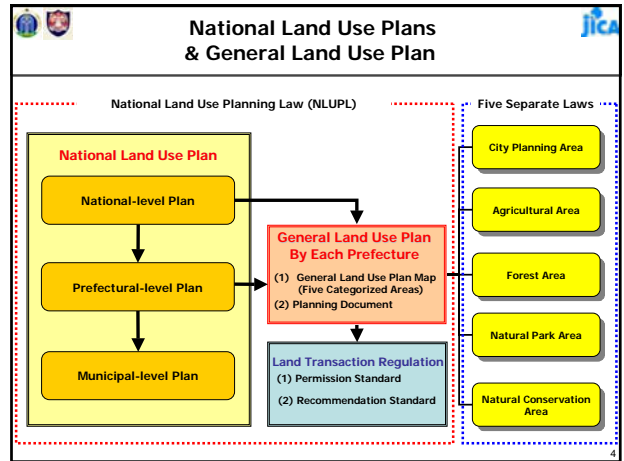
**Total Population (as of March, 2005)**  
Approx. 126,870,00 (persons)

**Administrative Structure (as of Oct., 2006)**

- Central Government
- 47 Prefectures
- 1,817 Municipalities
  - 779 Cities (15 Special Stated Cities)
  - 842 Towns
  - 196 Villages

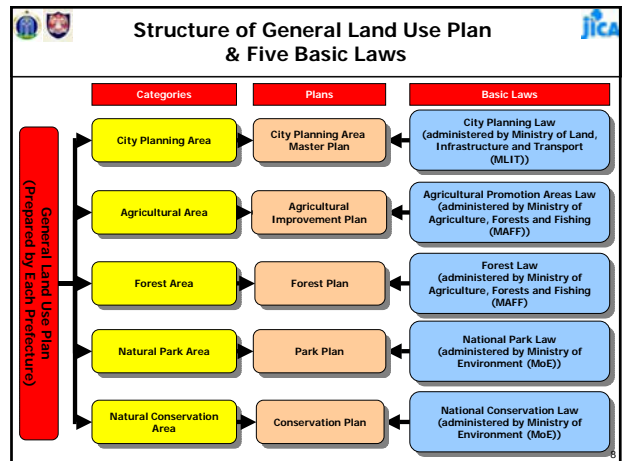
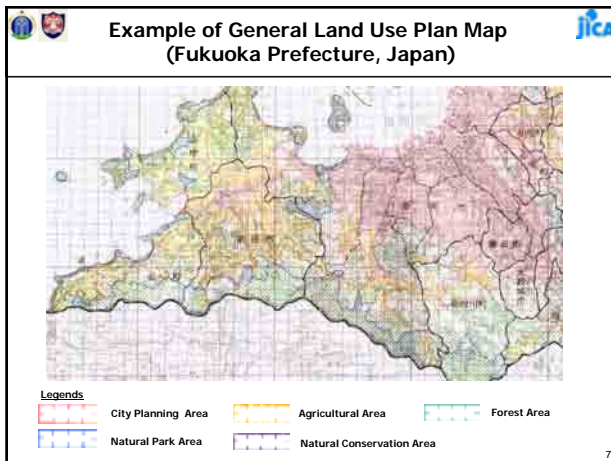
Unit: 0,000 ha

- Building Land
- Agricultural Land
- Forest Land
- Water Surface, Rivers, etc.
- Roads
- Isolated Wilderness
- Others



## Pictures for Five Categorized Areas

## Pictures for Five Categorized Areas



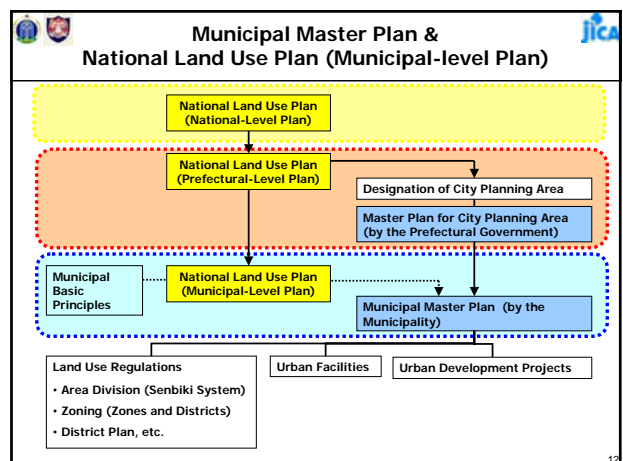
### Examples of Development Control Measures within Categorized Areas

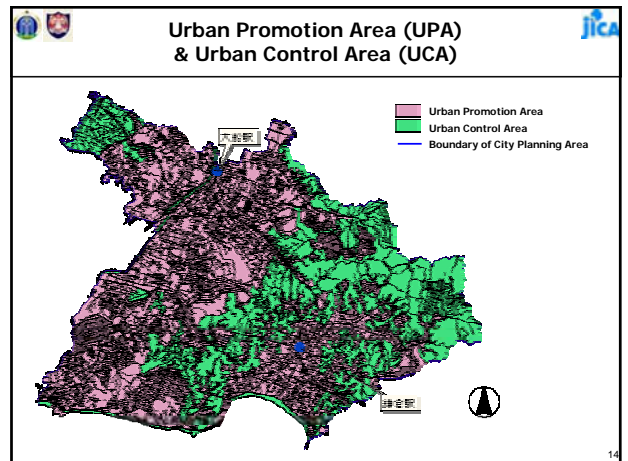
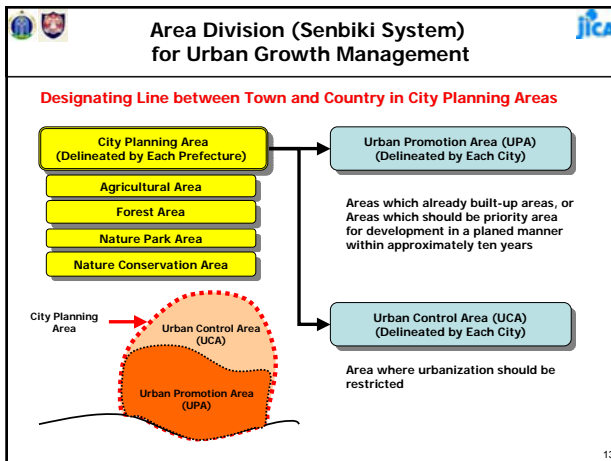
Categorized Areas	Areas which can be Designated	Available Development Control Measures
City Planning Area	<ul style="list-style-type: none"> <li>City Planning Area</li> <li>Urban Promotion Area (within CPA)</li> <li>Urban Control Area (within CPA)</li> </ul>	<ul style="list-style-type: none"> <li>Respective Development Permission System in Urban Promotion Area and Urban Control Area</li> <li>Land Use Regulations</li> <li>Building Code</li> </ul>
Agricultural Area	<ul style="list-style-type: none"> <li>Agricultural Promotion Area</li> <li>Agricultural Use District (within Agricultural Promotion Area)</li> </ul>	<ul style="list-style-type: none"> <li>Restriction on Conversion of Agricultural Land in Agricultural Use District</li> <li>Development Permission System in Agricultural Use District</li> <li>Recommendation System and Public Disclosure System for Development Activities within Agricultural Promotion Area except Agricultural Use District</li> </ul>
Forest Area	<ul style="list-style-type: none"> <li>Forest Reserve Area</li> <li>Target Area of Regional Forest Plan (prepared by Each Prefecture)</li> </ul>	<ul style="list-style-type: none"> <li>Development Permission System of Tree Cutting and Land Development in Forest Reserve Area</li> <li>Development Permission System (for Land Development more than 1 ha) in Private Forest located in the Target Area of Regional Forest Plan</li> </ul>



### Land Taxation System

Categories	Tax Types	Targets to be Assessed & Assessment Criteria
Tax on Land Acquisition	Registration License Tax (National Tax)	Registration fee of land and/or building based on assessed value of fixed assets
	Real Estate Acquisition Tax (Prefectural Tax)	Acquired real estate by buying land and/or building and constructing building based on assessed value of fixed assets
	Special Landholding Tax related to Land Acquisition (Municipal Tax)	Acquired land based on land acquisition cost (under suspension)
	Land Inheritance Tax (National Tax)	All properties including land based on assessed value of inherited properties (approx. 80% of posted land price)
Tax on Landholding	Fixed Asset Tax (Municipal Tax)	Land, building, and depreciable property based on assessed value of fixed assets (approx. 70% of posted land price)
	City Planning Tax (Municipal Tax)	Land and/or building located in Urban Promotion Area based on assessed value of fixed assets (approx. 70% of posted land price)
	Special Landholding Tax related to Landholding (Municipal Tax)	Land which is hold for less than ten years based on land acquisition cost (under suspension)
	Land Price Tax (National Tax)	Land, etc. based on assessed value of inherited properties (approx. 80% of posted land price) (under suspension)
Tax on Land Transfer	Levied through Personal Income Tax and Inhabitant Tax (in case of individuals)	
	Levied through Corporation Income Tax (in case of corporations)	

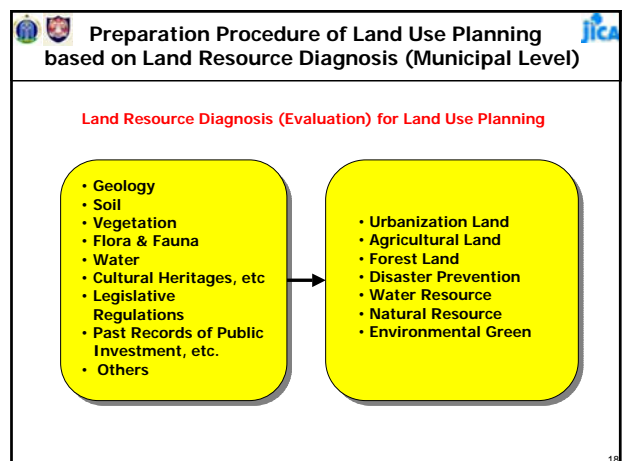
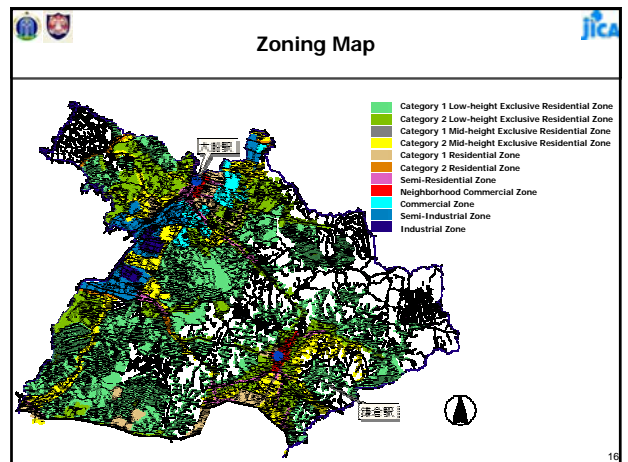


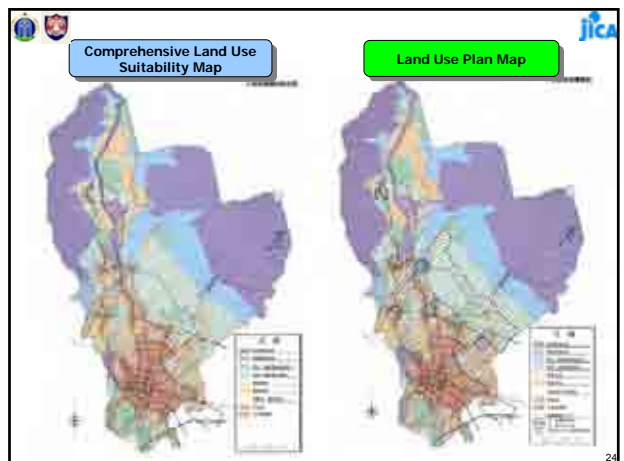
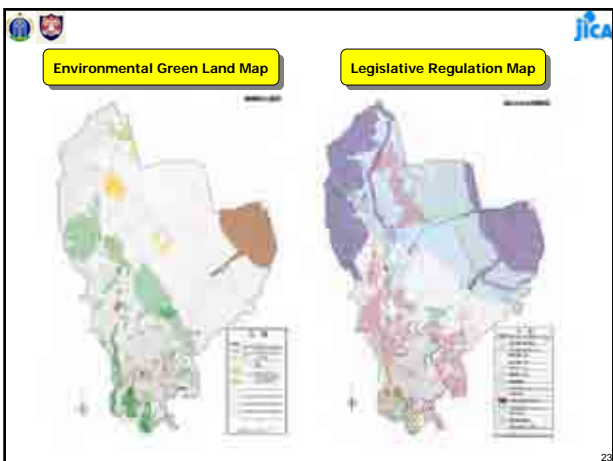
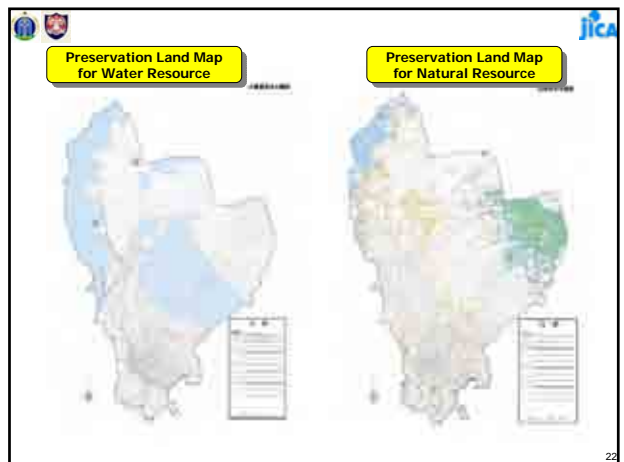
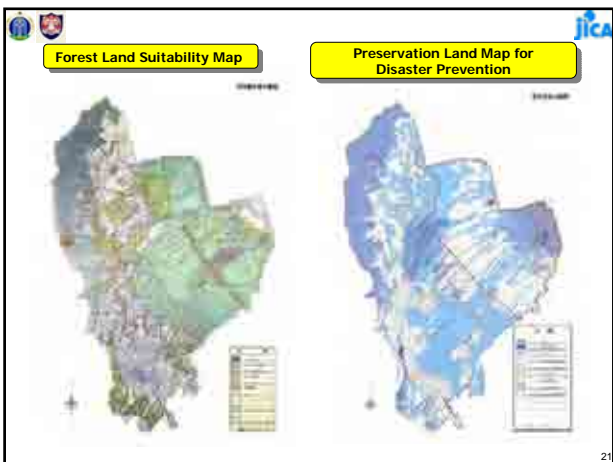
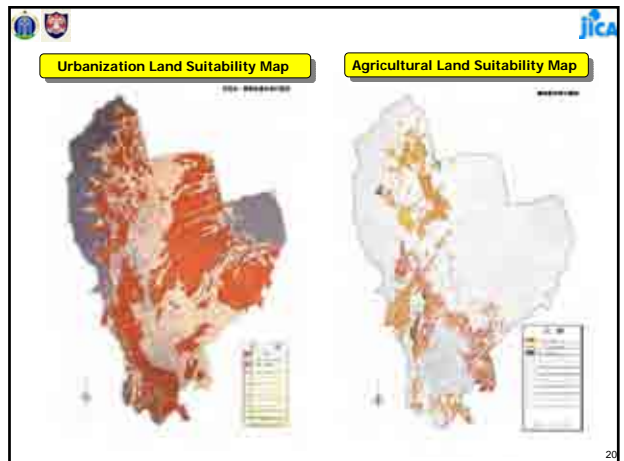
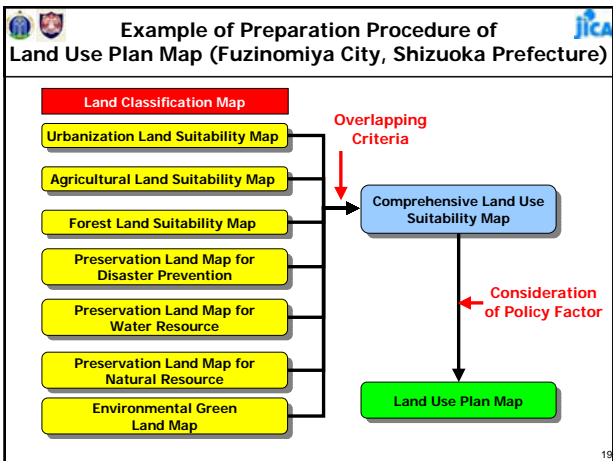


### Development & Land Use Control in relation to Area Division (Senbiki System)

Item	Urbanization Promotion Area	Urbanization Control Area
<b>Land Use Control</b>	Land use is controlled in accordance with Land Use Zoning, etc. for orderly use of urban lands.	Land use is regulated by plans from the agricultural side. Land Use Zoning is not designated.
<b>Public Investment</b>	Public facilities such as roads, park, sewerage, etc. are approved and public investment will be actively carried out.	Public investment for the promotion of agriculture will be actively carried out.
<b>Urban Development Project</b>	Will be actively done.	Will not be done.
<b>Land Development Permission</b>	For development of more than 1000m <sup>2</sup> , approval by the prefectural governor is necessary. Technical standards need to be met.	The urban development activities are strictly controlled.
<b>Conversion of Farmland</b>	Conversion must be reported to local government.	Official Approval from the prefectural governor is required.
<b>City Planning Tax</b>	City Planning Taxes may be collected to generate revenue to fund City Planning Projects.	Cannot be levied.

Source: "Urban Planning System in Japan 2<sup>nd</sup> edition" JICA in corporation with MLIT, March 2007









## Summary



- Establishment of Hierarchical System of Land Use Planning
- Establishment of Development Control in Divided Areas based on the above Hierarchical System
- Importance of Land Use Planning based on Analysis of Land Resource

**Placing Right Use in Right Place !**

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