

# Urban-Rural Interrelationship for Sustainable Environment

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"Department of Lands and Survey -  
The Modernization Journey"

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**Overall Goal**

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### History

The name of the Department of Lands and Survey appeared in 30/9/1929 after unifying the (Surveying Department, Treasury Land Department, and the Department of Land fixing and registration). It was attached to the Prime Ministry, and an English official was assigned by the Mandatory Government to preside it.

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### History cont.

After unification of Trans Jordan and the West Bank, the Lands and Survey Departments in the two Banks were unified, the new headquarters was in Amman and it became responsible for the registration directorates throughout the country, in 1952 and 1953 most of the laws concerning land and water settlement, registration, etc.... were enacted and applied in the two banks.

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### DLS's Mission:

*Maintaining, documenting, preserving, and facilitating the use of Land property rights; and providing the database necessary to build the National Geographic Information System.*

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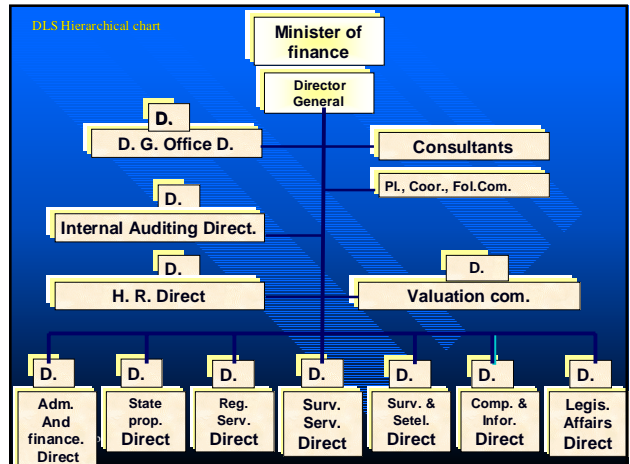
## DLS Vision

The Department of Lands and surveys owns reliable; comprehensive and accurate digital information which serves the objectives of comprehensive national development and is available to clients through easy equitable and transparent means, (to satisfy their needs) and is served by committed and efficient employees, with contribution of the privet sector, DLS can also recover its operational expenses.

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## Goals and Tasks

The Department of Lands and Survey plays a vital role in preserving land property rights and solving any conflicts, concerning right in land or water. DLS represents Jordan's land information bank.

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## Duties and authorities:

Clause 3 of the bylaw (80)1999 (organization of DLS) states that DLS Have the following Duties and authorities :

1. Performing a comprehensive survey of the lands of Jordan. And fix their borders, settling differences on land, and issuing Cadastral maps.
2. Registration of land property rights, maintaining them and facilitating their use.

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Duties and authorities cont...

3. Establishment and maintenance of triangulation network of fourth and fifth orders based on the national geodetic network which was built by the Royal Jordanian Geographic Center (RJGC)

4. Performance of land registration transactions and fixing due fees and collecting them.

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Duties and authorities cont...

5. Managing, guarding, follow up, renting, of treasury land, and appropriation of land for public interest.

6. Comprehensive valuation of land, and maintaining it for the purposes of registration transactions.

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Duties and authorities cont...

7. Registration land property data and keeping them.

8. Development of land information base, and maintaining it to serve as a base for a national information system.

Organizing the practice of licensed surveyors and land agents.

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## DLS - GTZ Agreement



The modernization Project in Cooperation with the German Agency of Technical cooperation "GTZ" started May 1996 a 3 Phases project

- Overall Goal: "Land Management and Land is based on upon complete, reliable, and accurate georeferenced information"

- Project Objective: "georeferenced information on Land is improved in quality and reliability; available to potential users through mutual agreement"

The third and last phase of the project, which will finish by the end of 2004.

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## Project Management

- Analysis Phase through the workshops involving Stakeholders.
- Developing Plan of operation
- Formation of Steering Committee.
- Appointing Key person for each planned result and Formation of supporting team for each result.
- Weekly meetings

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## Technical Challenges

- Cadastral maps based on relatively weak, non-homogenous geodetic network
- The geodetic network is computed and based on a non-conformal projection "Cassini-Soldner"
- Maps production through different methods and scales "Different Qualities"
- During 1970s and 1980s many subdivision of big Parcels took place on maps only "low Quality"
- Boundary fixing "on the field" through non-qualified people
- Others

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## H. R. Challenges

- 2 PhD
- 6 Masters
- 2 Higher Diploma
- 123 Bachelors (12 Surveying and mapping engineers)
- 383 Medium college
- 784 High School and less.

Total 1300 staff

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## Legislations Challenges

- Laws and bylaws are very old “Mostly 1940 – 1960, “some goes back to 1920”
- Most of the legislations are explained by circulars with long procedures.

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## The Modernization Project

First phase  
April 1996-Dec1998

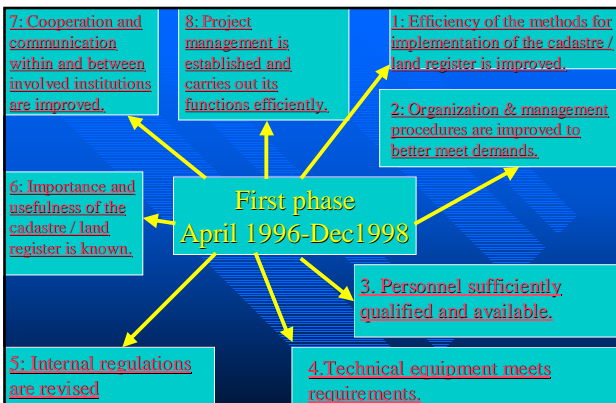
Third Phase  
Jan 2002-Dec2004

Second Phase  
Jan 1999-Dec 2001

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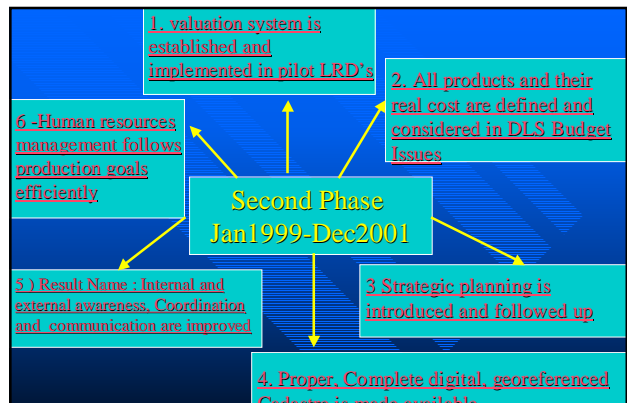
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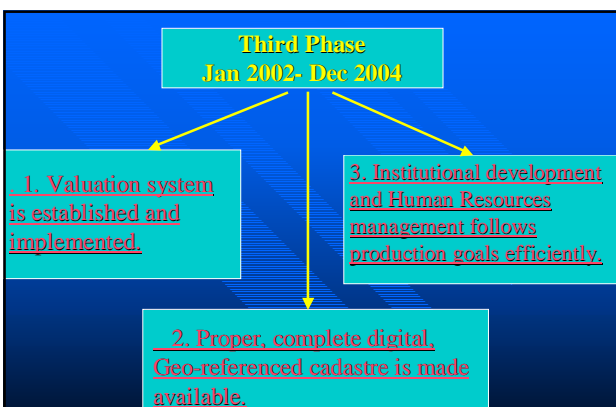
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## H. R. Challenges

### HR Development and Management

PhD	2	1500 Training opportunity yearly
Masters	10	The comprehensive training course
Bachelor	181 "28 Surveying Eng."	Bridging (Surveyor-Engineer)
Medium College	468	
High School and less	762	
Total	1423	

- The creation of pool of talents
- The creation of promising leaders
- Training courses with MDF-Netherlands
- The comprehensive computerized HRM system

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## Legislations Challenges

- \* Amendment of (4) Laws
  1. Mortgage
  2. Evaluators
  3. Licensed Surveyors and real estate commissioners “brokers”
  4. Expropriation
- \* Revision of all circulars

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## Technical Challenges Over coming Technical Challenges through separated projects

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## DLS Projects Documents Archiving and Restoration



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## DLS Projects Cont

### Un-surveyed Areas Project

Demand on information about the un-surveyed areas Are increasing for different reasons; leasing, mineral concession, tribal claims, ...etc

DLS decided to cadastre the rest of the country. This task was accomplished in 2002., using the Jordan Transverse Mercator (JTM) and the National Geodetic Network (in the same projection).

Jordan Transverse Mercator projection uses as a geodetic datum the International Hayford Ellipsoid.

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## DLS projects Cont.

### Maps Digitization Project

(project importance for DLS, Other Ministries and institutions)

This conversion project started in 1996 ended in 2000. It aimed to convert all hard copy maps into digital form by the mean of scanning and vectorization.

Having in mind the bad qualities of the paper maps and its information a huge and tremendous work had to be conducted and it was brought to a successful end.

Knowing that 20% of the maps had no reference points or gridlines, it was necessary to conduct field observations on identical points to geo-reference these maps.

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## Converting the original map



Converting the Negative film



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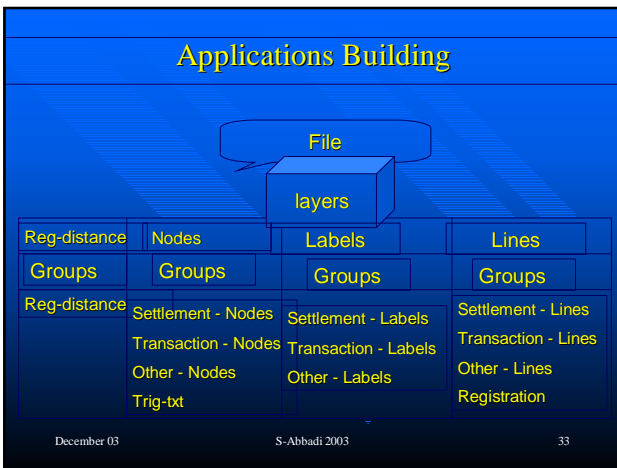


Breaking test



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DLS projects    Cont.

### Maps Edge Matching Project

The process of converting paper maps into digital ones highlighted the problem of non-matched edges and the low accuracy of the maps.

The edges of the neighbouring maps were not identical and the difference between these edges reached more than 4m for maps at 1/2500 scale in urban areas, which is far below the graphical accuracy.

Edge matching process started in 1997; a mathematical model was elaborated and implemented.

Now we are finalizing and it will be finished before the end of this year

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DLS projects    Cont.

### Maps transformation to JMT project

Maps in cassini-soldner projection cover 25% of Jordan and maps in JTM projection cover the rest of the country. The goal of the project is to transform all maps into JTM projection . to reach this target an extensive fieldwork was carried out between 1998-2000.

2200 DLS triangulation point (out of 42000) were observed by GPS (Global positioning system ) and linked to the national geodetic network. These points have coordinates in cissini-soldner projection and the field surveying provides their JTM coordinates .

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DLS projects    Cont.

### Maps transformation to JMT project    cont.

the points are used to determine the transformation parameters between cissini-soldner and JTM projection.

Once the parameters are known all 42000 DLS points can be transformed to JTM , which is expected to be finished by the end of 2003

The next and important step will be to convert the digital matched and updated maps to JTM using the same transformation parameters as for the trig control points.

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DLS projects Cont.  
cadastral maps updating project

The project started recently (end of 2002) with the main purpose as: "cadastral map is consistently updated with comprehensive, homogenous and accurate data through clear and well-established procedures in order to meet the demands of all users".

DLS projects Cont.  
cadastral maps updating project cont

Some of this project main results or goals are as follow:

- Programs and applications used are well integrated in order to establish and effective cadastral information system (CIS).
- Human resources are qualified and sufficient.
- The updating mechanism of the cadastral maps are clear, agreed upon and implemented consistently.
- The geodetic network is computed, accurate and documented in JTM coordinate system.

General Activities

- \* Equipment:
  - GPS Receivers,
  - Total Station,
  - PC's,
  - 3 surveying Cares "Surveying Laboratories,
- \* Procedures:
  - ISO 9002 Certificate (upgraded to the 9001/2000)
- \* Documents Archiving,
- \* Valuation System:
  - Workshops,
  - Trainings,
  - Legalization,
- \* Code of ethics

The Code of ethics Statement

**I, hereunder signed, declare my commitment to optimally use the available resources for the official duties correctly using equipment, instruments, and work time for official work, and to be true, honest, and faithful in my work, belonging to my department, to work with team spirit, to respect all the customer and to treat them equitably, to respect my colleagues and to try to be precise in dealing with information**

Modernization Main outputs

- All Maps are Digitized
- Cadastral Register is Digitized
- More than 90% of Jordan is Mapped "Starting by 25%"
- 19 LRD out of 32 LRD are Computerized and linked on line with DLS center
- Digitizing 200 000 Land Division sheets
- Cadastral Plans takes 5 Minutes "2 days Previously"

Modernization Main outputs cont.

- "One Stop" Customer service
- Digitizing 300 000 Sales contracts out of 2 million
- Issuing Land Titles and Cadastral Plans for any parcel from any LRD
- Strategic plan and annual plan
- Institutional performance system
- Costing System
- Land Evaluation System

#### Modernization Main outputs

- Issuing several Books, Magazines, , Reports, and brochures
- DLS as a Pilot Gov-Institute to apply the Performance Budgeting
- The creation and updating of the e-Library
- Talents pool

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#### Future vision

DLS wishes to be able to support and contribute to the process of land management effectively by providing all institutions dealing with land management aspects and applications with complete accurate and up-to-date cadastral data. It also wants to be able, to all interested users.

“Vision completion”

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#### Final thought

It is all about Humans and Continuous Follow up

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Thank you for your attention

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#### First Phase

Result 1: Efficiency of the methods for implementation of the cadastre / land register is improved.

- 1.1: Elaborate a long term and a medium term concept for an efficient production.
- 1.2: Elaborate a clear and well-defined set of technical and procedural instructions.
- 1.3: Review and update regulations and instructions regularly to suit growing and changing needs.
- 1.4: Establish quality control and quality assurance procedures.

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#### First Phase

Result 2: Organization & management procedures are improved to better meet demands.

- 2.1: Establish organization study.
- 2.2: Develop decentralization concept.
- 2.3: Establish job description.
- 2.4: Establish efficient monitoring system.
- 2.5: Define training needs and establish training programs to improve managerial skills.
- 2.6: Execute training courses for managers and decision makers.
- 2.7: Organize public awareness campaign about decentralization process.

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### First Phase

Result 3: Personnel sufficiently qualified and available.

- 3.1: Evaluate training needs and design overall training program.
- 3.2: Implement first training courses for trainers.
- 3.3: Implement first basic training courses for staff from pilot LRD's, DLS and pilot users.
- 3.4: Install basic training facilities at DLS.
- 3.5: Introduce methods to match recruitment with job description.
- 3.6: Enhance job description for every employee.

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### First Phase

Result 4: Technical equipment meets requirements.

- 4.1: Agree upon a common set of LIS-standards with RJGS and users.
- 4.2: Design, select and install hardware and software at pilot LRD's, DLS and pilot users.
- 4.3: Establish a plan for preventive maintenance of the equipment.
- 4.4: Prepare and revise regularly a data flow diagram.
- 4.5: Define privileged access to data.

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### First Phase

Result 5: Internal regulations are revised.

- 5.1: Specify job description for DLS staff.
- 5.2: Specify function description for directorates.
- 5.3: Revise regulations within DLS.

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### First Phase

Result 6: Importance and usefulness of the cadastre / land register is known.

- 6.1: Produce periodical publications.
- 6.2: Establish research unit to deal with analysis of land activities and to produce statistics.
- 6.3: Introduce computer awareness for managers.
- 6.4: Conduct public relation and awareness promotion activities; seminars / workshops.
- 6.5: Establish information bureau for citizens.
- 6.6: Introduce computer awareness program (courses)

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### First Phase

Result 7: Cooperation and communication within and between involved institutions are improved.

- 7.1: Organize and hold seminars, workshops ...etc. for DLS-internals and DLS-externals.
- 7.2: Identify type of information to be provided to others.
- 7.3: Establish NGIS committee in cooperation with NIC.
- 7.4: Establish organizational study to improve information flow.
- 7.6: Arrange regular meetings for DLS-directors.
- 7.7: Monitor (follow-up) application of workshop / seminars recommendations.
- 7.8: Coordinate with NIC in project planning.

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### First Phase

Result 8: Project management is established and carries out its functions efficiently.

- 8.1: Establish the office infrastructure and hire required personnel.
- 8.2: Review and if necessary, revise the project planning and prepare detailed plan of implementation and update it annually.
- 8.3: Establish a project monitoring and evaluation system and run it efficiently.
- 8.4: Ensure regular reporting about the project's progress to the Jordanian and the German side.
- 8.5: Conduct a project progress review in the first half of the third year.

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Second Phase

**Result 1. valuation system is established and implemented in pilot LRD's**

- 1.1 Adopt suitable theory for appraisal system.
- 1.2. Collect data to build the data base.
- 1.3. Establish an adequate database for land evaluation.
- 1.4. Define the pilot LRD(S) to / and implement the system.
- 1.5. Convince external users to use the valuation system.
- 1.6. Acquire the suitable application program.
- 1.7. Test methods to transform valuation parameters into tax assessment.
- 1.8 Become a member in TEGOVA
- 1.9 Introduce a system (external and internal to license land valuator).
- 1.10. Establish training program for valuator.

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Second Phase

**Result 2. All products and their real cost are defined and considered in DLS Budget Issues**

- 2.1 Define all kind of products
- 2.2. Define the cost of person hour work
- 2.3 Establish monitoring and evaluation system for working hours.
- 2.4 Calculate the real cost of the products.
- 2.5 Establish an analytical accounting system.
- 2.6 Update product description and cost continuously.
- 2.7 Establish monitoring and evaluation system for DLS investments.

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Second Phase

**Result 3. Strategic planning is introduced and followed up.**

- 3.1 Strategic plan
- 3.2 Quality assurance system (QAS)

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Second Phase

**Result 4. Proper, Complete digital, georeferenced Cadastre is made available**

- 4.1 Extend computerization process in other DLS units
- 4.2 Review laws and bye – laws at DLS
- 4.3 Establish a proper geodetic network
- 4.4 Build a comprehensive and practice oriented Cadastre Information System ( CIS )
- 4.5 Introduce new concepts and techniques
- 4.6 Improve and complete the cadastre

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Second Phase

**Result 5. Internal and external awareness, Coordination and communication are improved**

- 5.1 Develop Correspondence follow up system
- 5.2 Improve Social climate in DLS
- 5.3 Follow up the establishment of the library
- 5.4 Develop coordination between inside DLS and other Institutions
- 5.5 Help licensed surveyors to establish association and support it
- 5.6 Activate the public relation unit
- 5.7 Define customer oriented concepts and implement them

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Second Phase

**Result 6 - Human resources management follows production goals efficiently**

- 6.1 Complete and improve a comprehensive database about personnel.
- 6.2 Analyze the conformity between job description and personnel.
- 6.3 Introduce management by objectives concept in DLS (concerning personnel)
- 6.4 Ensure that the evaluation system is implemented effectively
- 6.5 Run training programs upon updated training needs.
- 6.6 Establish training center.
- 6.7 Establish a motivation & rewarding system.

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**Third Phase**

**Result 1. Valuation system is established and implemented in DLS.**

- 1.1 Revise the system and extend its implementation.**
- 1.2 Acquire a suitable application program.**
- 1.3 Develop and implement awareness programs for valuers and users.**

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**Third Phase**

**Result 2 Proper, complete, digital, geo-referenced cadastre is made available**

- 2.1 Improve and complete the cadastre**
- 2.2 Extend the decentralization and computerization process**
- 2.3 Build a comprehensive and practice oriented CIS (Cadastral Information System)**
- 2.4 Promote the qualification and performance of licensed surveyors.**

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**Third Phase**

**Result 3. Institutional development and human resource management follow production goals efficiently**

- 3.3 Run training programs upon updated training needs**
- 3.4 Develop customers' oriented concepts and implement them**
- 3.5 Improve social climate in DLS**
- 3.6 Evaluate the institutionalized cost system and drive pricing policies internally and externally**
- 3.7 develop a model to enhance gender equity**

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