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Kathmandu, Nepal 14–16 November

REGIONAL CONFERENCE 2024

Climate Responsive Land Governance and Disaster Resilience: Safeguarding Land Rights



Towards GIS Based Land Valuation in Nepal: Status, Challenges and Way Forward

NEPAL Harisharan, THAPA Mahesh, LAMICHHANE Thakur, GAUTAM Sudarshan Kumar, BHATTA Ganesh Prasad, BHUSHAL Ashok kumar, GHIMIRE Namuna and MAHAT Bishnu Kumar, Government of Nepal

Presenter

Harisharan Nepal

Chief Survey Officer

Survey Department, Government of Nepal

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Presentation Outline

- land valuation in Nepal
 - Legal Provisions and Institutional Setup
 - Challenges
 - Implications of current practices
- Towards GIS based Land Valuation
 - Strength and preparations
 - Lessons from Exploratory Study
 - Key Activities
- Developing GIS based Valuation System: Potential Areas of Collaboration
- Implementation of GIS based Valuation System: Way Forward





Land Based Economy: Some Figures

- **Revenue Generation** from Real Estate Transfer Tax and Capital gain Tax: Fiscal Year 2020/21 - **NRs. 58.34 Billion**
- Annual Real Estate **Transaction** ~ **NRs. 484 Billion** (projected from collected revenue; as indicated in deed documents)
- **Real Estate Loans** issued by **Commercial Banks**
 ~ **NRs. 198 Billion** (Fiscal Year 2021/22)
- Government Expenditure on **Land Acquisition**
 ~ **NRs. 12.36 Billion** (Fiscal Year 2022/23)
 (1.16 Billion through International Debt)

Annual Loan and Advances of Commercial Banks in NRs. (1 USD~135 NRs.)

| | FY 2019/20 | FY 2020/21 | FY 2021/22 |
|-------------------------------------------|--------------------|--------------------|-----------------------------|
| Total loan and advances | 2886.63 Billion | 3687.65 Billion | 4153.45 Billion |
| Collateral wise loan and advances | | | |
| Security by collateral of property | 89.5% | 87.97% | 87.99% |
| Product wise loan and advances | | | |
| Real Estate Loan | 4.87% | 4.28% | 4.78% = 198.5 Billion |

GDP of Nepal ~ NRs. 4933 Billion (Fiscal Year 21/22)
 1 USD ~ 135 NRs

Data Source: NRB, MoLCPA, DoLMA





Legal Provisions and Institutional Setup

- **Legal Provision:** > 11 laws and bodies/committee governing land valuation.
 - Absence of separate/specific *Property Valuation Act*.
- **Major Institutions/Committees/Individuals** involved in land valuation
 - **Minimum Valuation** for Transaction of land => **7-member committee** headed by Chief District Officer, as stipulated by Land Revenue Act and its Rules
 - **Compensation During Land Acquisition** => **4-member committee** headed by Chief District Officer, as stipulated by Land Acquisition Act
 - **Compensation, Penalties and Fines** => Administered by **Courts** under relevant legislation
 - **Property Certification** => Local government
 - **Collateral Valuation** => Banks and Financial Institutions (BFIs) perform valuations of land and property through consultants (typically Civil Engineer and Architects, rather than surveyors)



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Minimum land valuation by LRO for FY 80/81 BS (in NRs. per Sq.M.)



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Minimum land valuation by LRO for FY 80/81 BS (in NRs. per Sq.M.)



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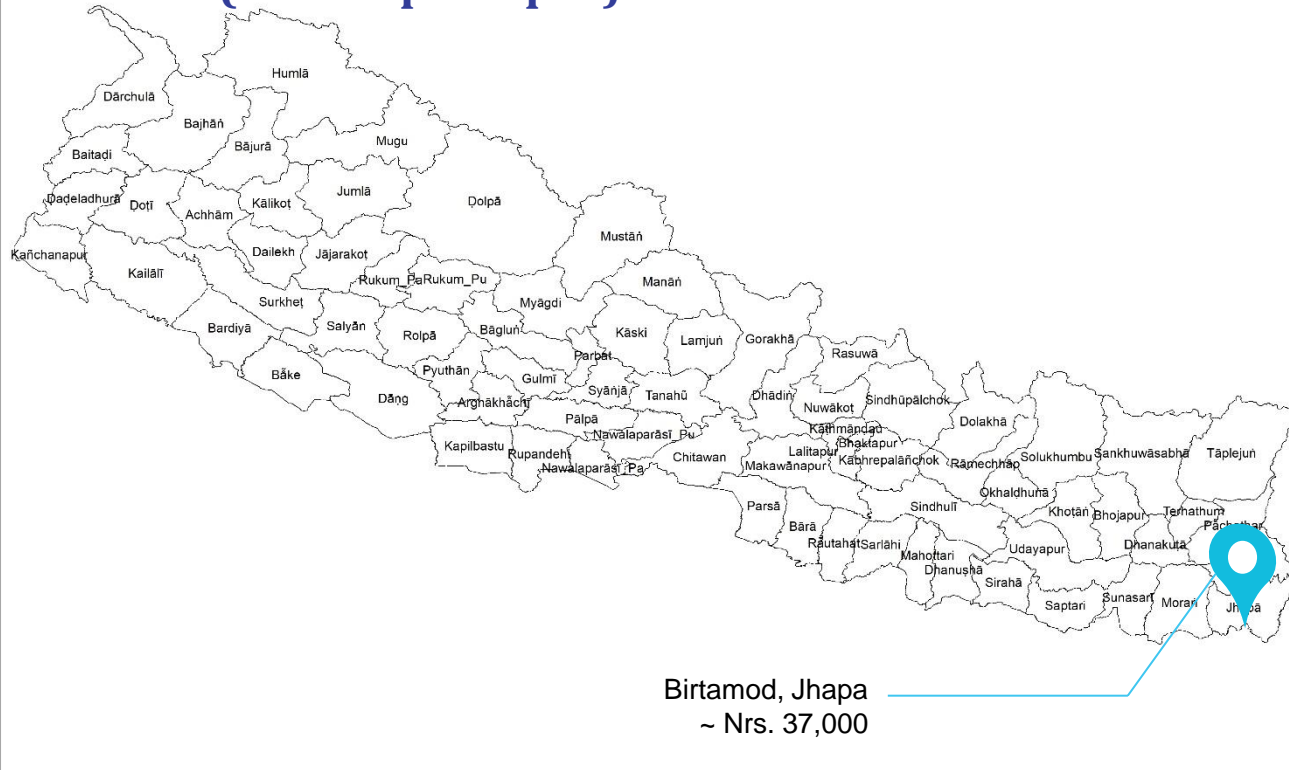
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Minimum land valuation by LRO for FY 80/81 BS (in NRs. per Sq.M.)



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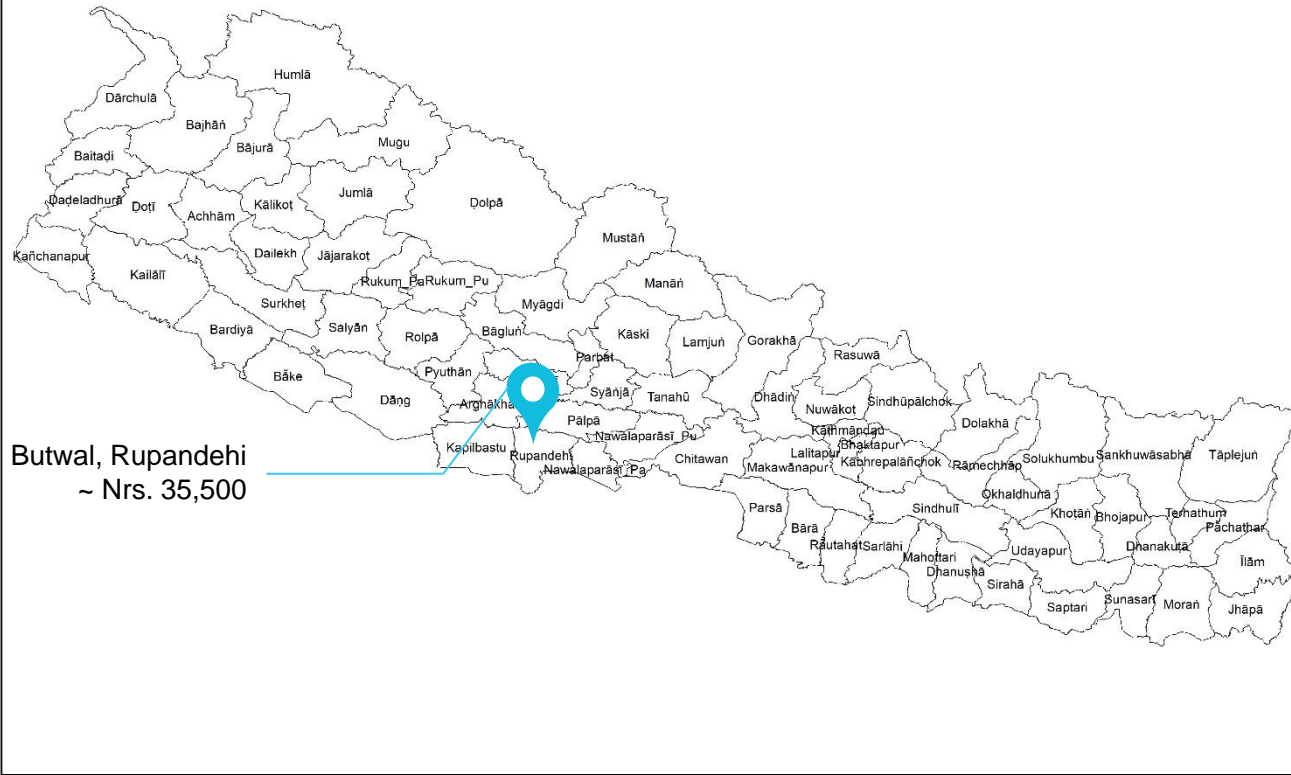
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Minimum land valuation by LRO for FY 80/81 BS (in NRs. per Sq.M.)



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Minimum land valuation by LRO for FY 80/81 BS (in NRs. per Sq.M.)



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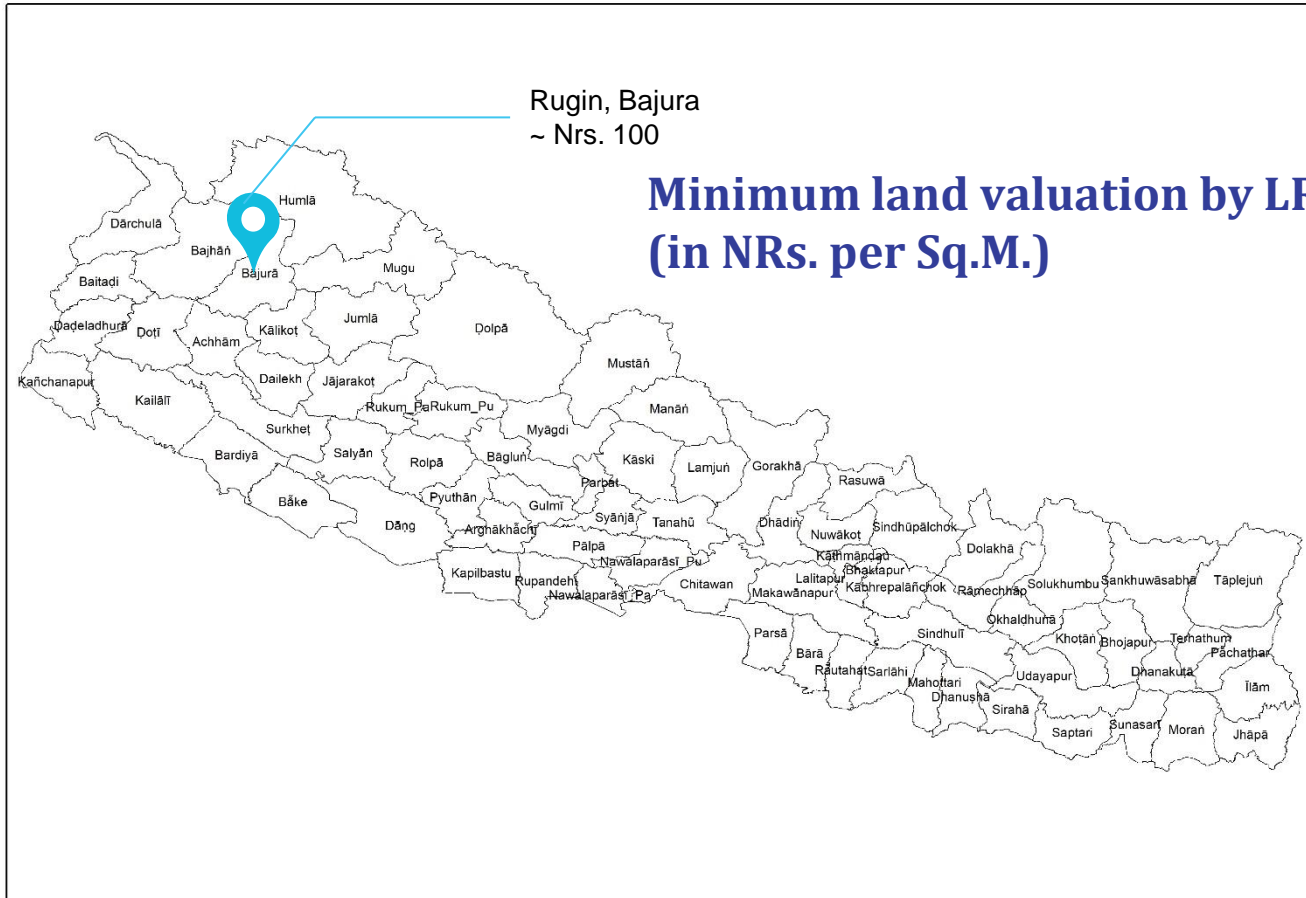


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Climate Responsive Land Governance and Disaster Resilience: Safeguarding Land Rights



Rugin, Bajura
~ Nrs. 100

**Minimum land valuation by LRO for FY 80/81 BS
(in NRs. per Sq.M.)**



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Minimum land valuation by LRO for FY 80/81 BS (in NRs. per Sq.M.)



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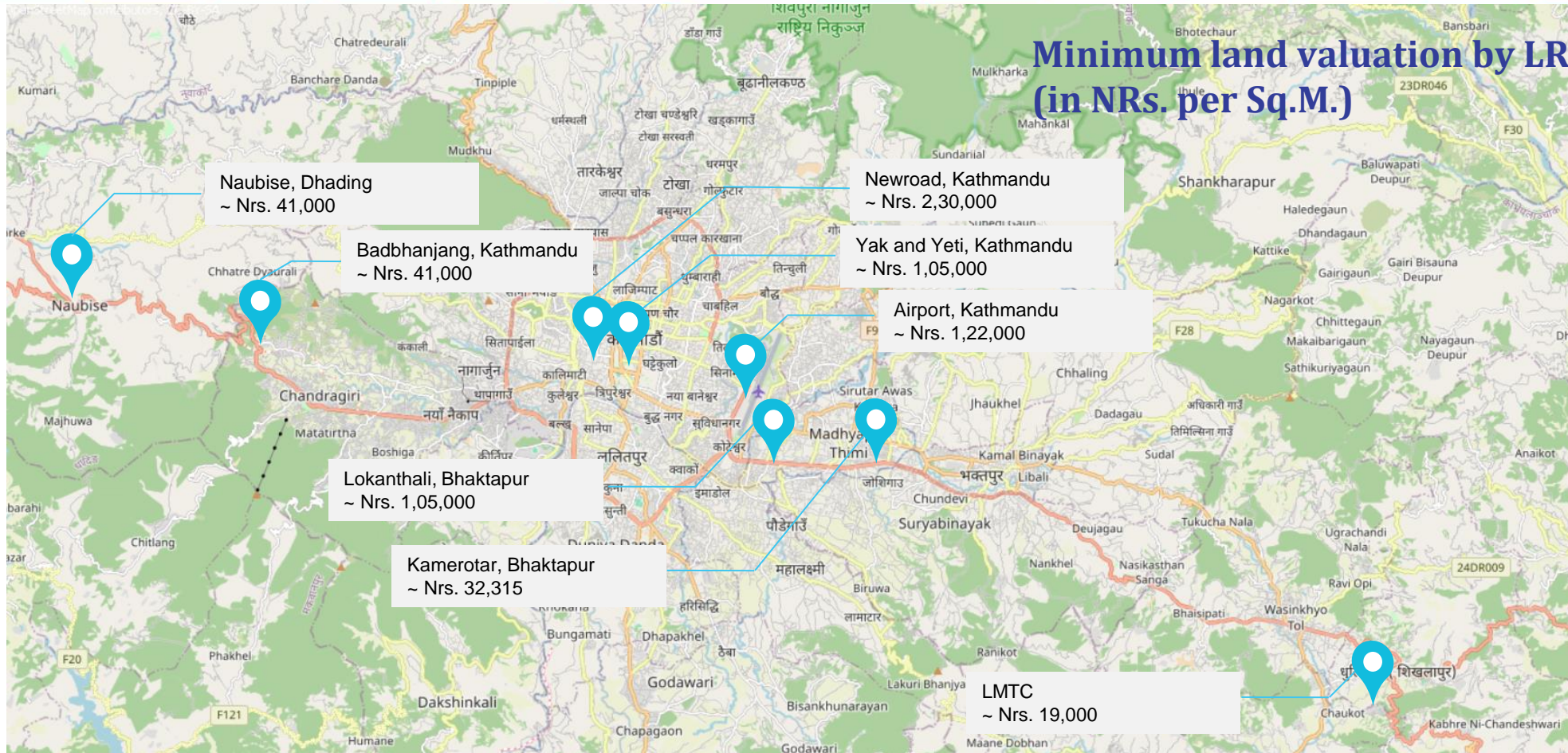
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Minimum land valuation by LRO for FY 80/81 BS
(in NRs. per Sq.M.)



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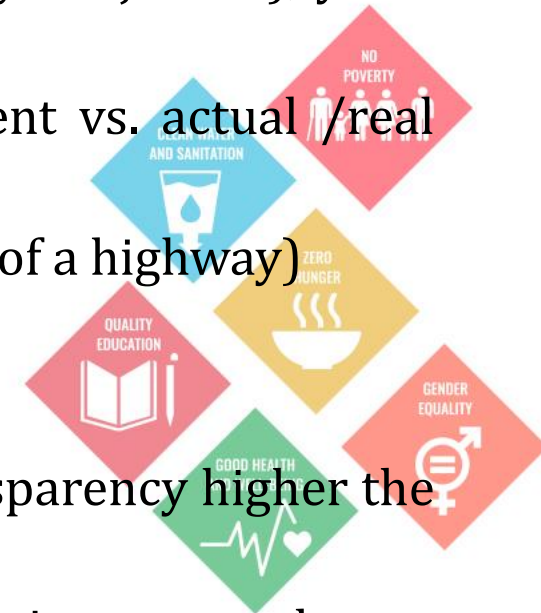
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Land Valuation in Nepal: Challenges

- Absence of **regulatory body and land valuation guidelines**
- In the absence of **uniform practice**, land valuations conducted by different individuals and institutions based on **varying legal provisions** can lead to **significantly different land values**.
- **Traditional approach** (eg. Weighted sum of min value and market value (mostly subjective), year-wise % increment)
- Dominance of **informal economy** (Transacted value indicated in deed document vs. **actual/real deal**)
- **Not always parcel based** (eg. Similar value to all the parcels adjoining the section of a highway)
- **Extracting market value**
- Undefined **maximum land value**
- **Unrecognized intermediaries/individuals** speculate land value (lower the transparency higher the value by speculation)
- **Limited** academic institutions to provide degree / course on land valuation. Insufficient research





Implications of unscientific and inconsistent method for land valuation

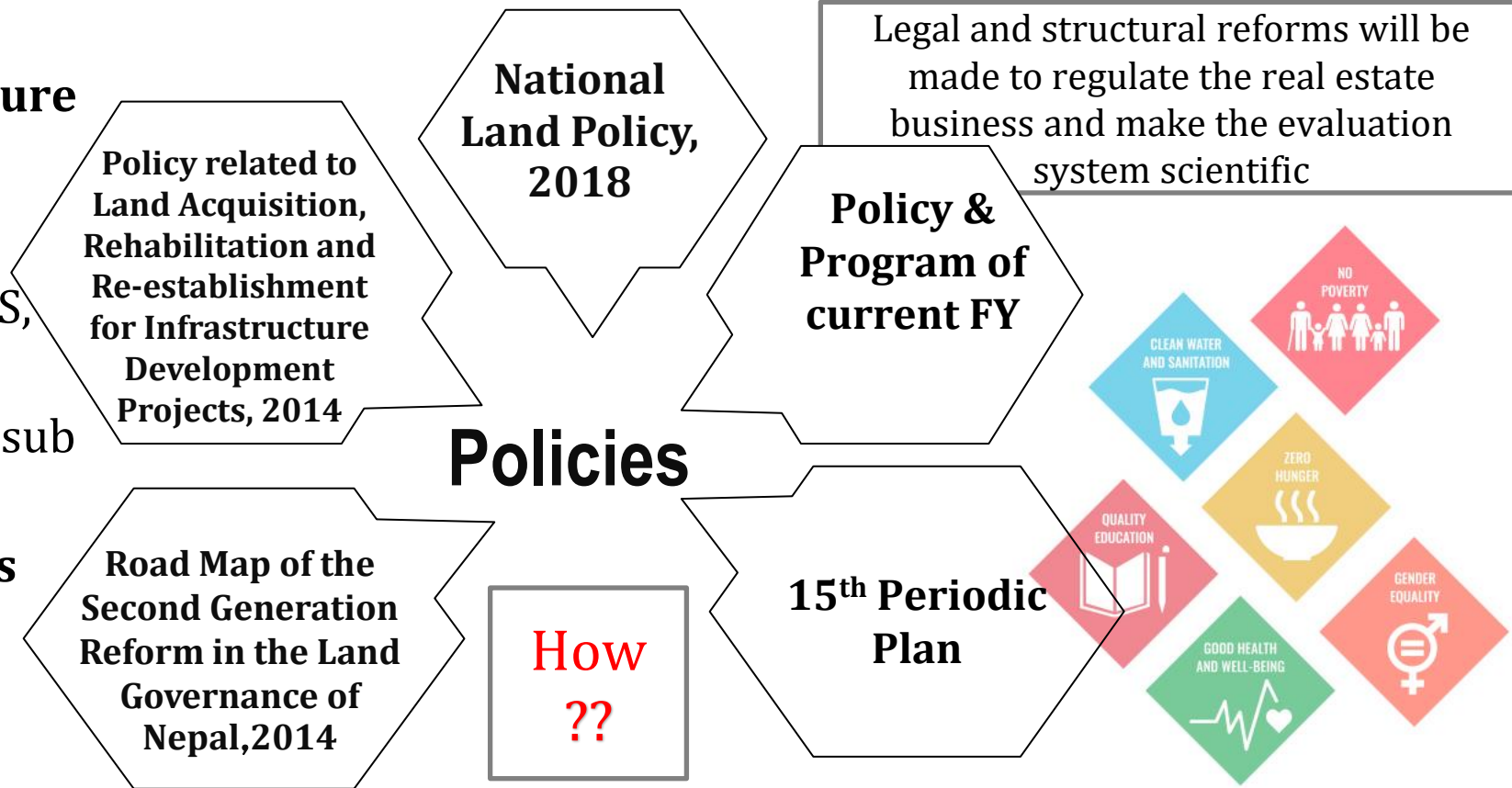
- The government may be *losing revenue* from land-based taxes due to under-valuation, while also potentially *imposing unfairly higher taxes* due to over-valuation.
- The determination of *compensation amounts* during compulsory land acquisition often becomes a contentious issue, often leading to **delays in project completion**. At times, Cost of land acquisition **exceeds cost of project** construction
- Hampered other sectors of land management such as development of *fair land market*, accomplishing *land reform tasks*, conducting *land development works*, etc
- Land **value speculation** by non recognized and unregulated intermediaries
- Management and rehabilitation of **landless, slums** and **unmanaged settlers**
- Tools of **Land Value Capture**: only capital gain tax ?
- Money Laundering.
- Banking Fraud: **Soaring tensions** among BFIs and private valuers?





Towards GIS based Land Valuation: Strengths and preparation

- Land Administration: Land Use, Value, **Ownership, Information Infrastructure**
- Good **cadastral coverage**
- Formulation of **Policies and plans**
- **Institutional setup** (MoLCPA, MoF DoS, DoLMA...)
- Formation of Committee and Technical sub committee: **Exploratory Study**
- Willingness of **Development Partners** (WB, ADB)
- Increment in **Research Activities**

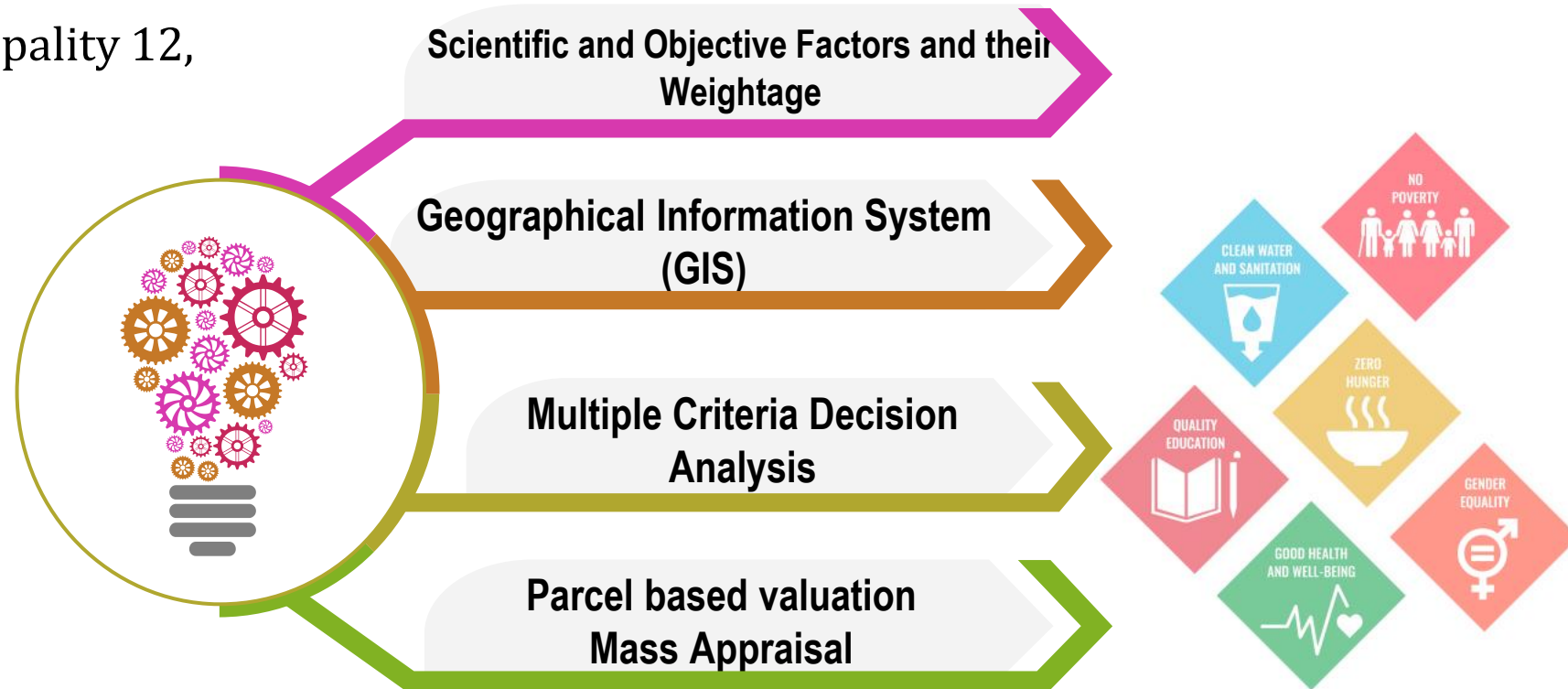


REALIZED BUT NOT MATERIALIZED



GIS based Land Valuation: Exploratory Study

- **Study Area:** Banepa Municipality 12, Kavrepalanchok
- Indicators and Influencers
- Methodology
- **System Development**
- **Piloting**

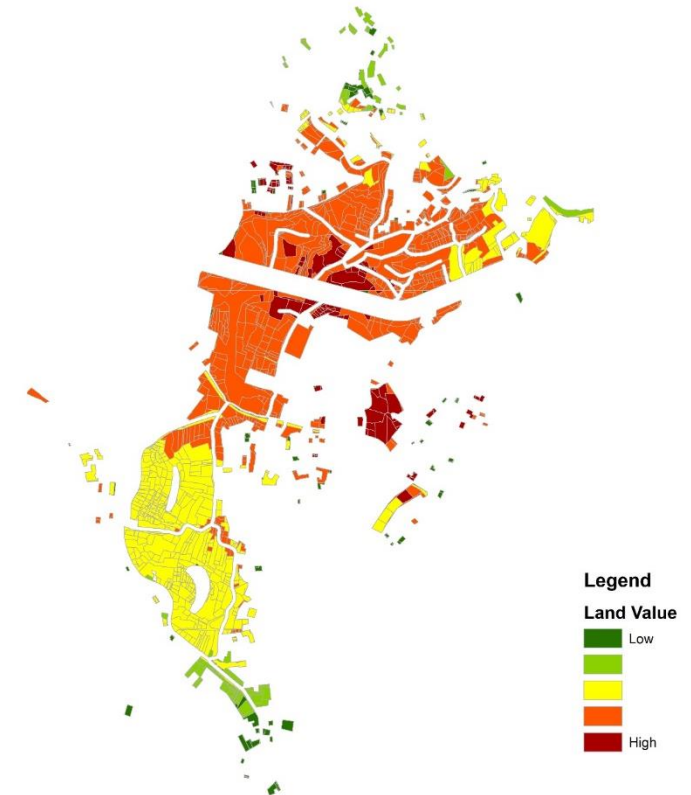




Banepa Municipality Ward No 12

GIS based Land Valuation: Exploratory Study

- Preparation of **list of influencers** of land value and development of **criteria and indicators**.
- Since different criteria have varying level of effect on land value, **weightage of each criteria** (and/or sub-criteria) needs to be determined.
- Based on the criteria and weightage, a **relative index of land value** was developed using GIS.
- The index was **scaled with sample land values** using appropriate methods to determine Land Value.
- Validation





GIS based Land Valuation: Key Lessons from the Exploratory Study

- Development of **standard and acceptable set of criteria** and indicators (**Participation**) and assigning their **weightage** (**Domain Expert** Engagement and input)
- Multiple Indicators demands multiple set of **data** (**Availability, Accuracy and Updateness**). Demands updated Large Scale Base Maps (data)
- Acquisition of **fair and current market value**
- **Defining area for assessment** /development of the system
- **Land Use Zones** and Land valuation
- Demands **cost and time** (Participatory, Piloting in multiple geography and scenarios)
- Demands **rigorous research** via dedicated unit/task force
- **Mass appraisal** for taxation & **individual appraisal** for **specific purposed** valuation
- **First Step:** Development of **appropriate system, its piloting and testing. Second Step:** legal improvement, institutional set-up, sensitization...





Way Forward to develop GIS based Valuation System

1. **Refine** the proposed method of **GIS-based Land Valuation System** in consultation with domain experts and stakeholders, but also keep an eye for other more appropriate methodologies.
2. **Conduct Pilot Study** utilizing updated large scale base map data. **Validate** the result.
3. Finalization of **Land Valuation Guidelines** based on pilot study and consultation with experts and various stakeholders.
4. Develop **Application** for determining Land Value.





Developing GIS based Valuation System: Potential Areas of Collaboration

| S.N | Activities | Area of Collaboration |
|-----|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Refine current method or develop new method for land valuation | <ul style="list-style-type: none"> a. Expert Support (economists, domain experts (agriculture economists, urban planner), etc. b. Workshop conduction with experts and stakeholders c. Exposure to existing practices |
| 2 | Conduct Pilot Study utilizing updated large scale base map. | <ul style="list-style-type: none"> a. Technical/financial support in preparation of large scale base map of selected pilot study area |
| 3 | Preparation of Land Valuation Guidelines | <ul style="list-style-type: none"> a. Conduction of workshop b. FIG, IVSC,RICS |
| 4 | Application Development | <ul style="list-style-type: none"> a. Financial / Technical support/assistance in application development |
| 5 | Capacity Development | <ul style="list-style-type: none"> a. Conduction of trainings for utilization of application |





Implementation of GIS based Valuation System: Way Forward

- Political **consensus**
- Consolidation/amendment of **related laws**
- **Institutional Setup** (*Establishment of Land Valuation Authority*)
- Preparation of **Land Valuation guidelines**
- **Licensing and regulating** land and property valuers
- **Readiness** to implement the system by concerned **authorities and organization**
- Strategy to **minimize reluctance** to adopt fair valuation by concerned parties (like citizens, valuers, brokers, banks) (maybe by lowering stamp duty)



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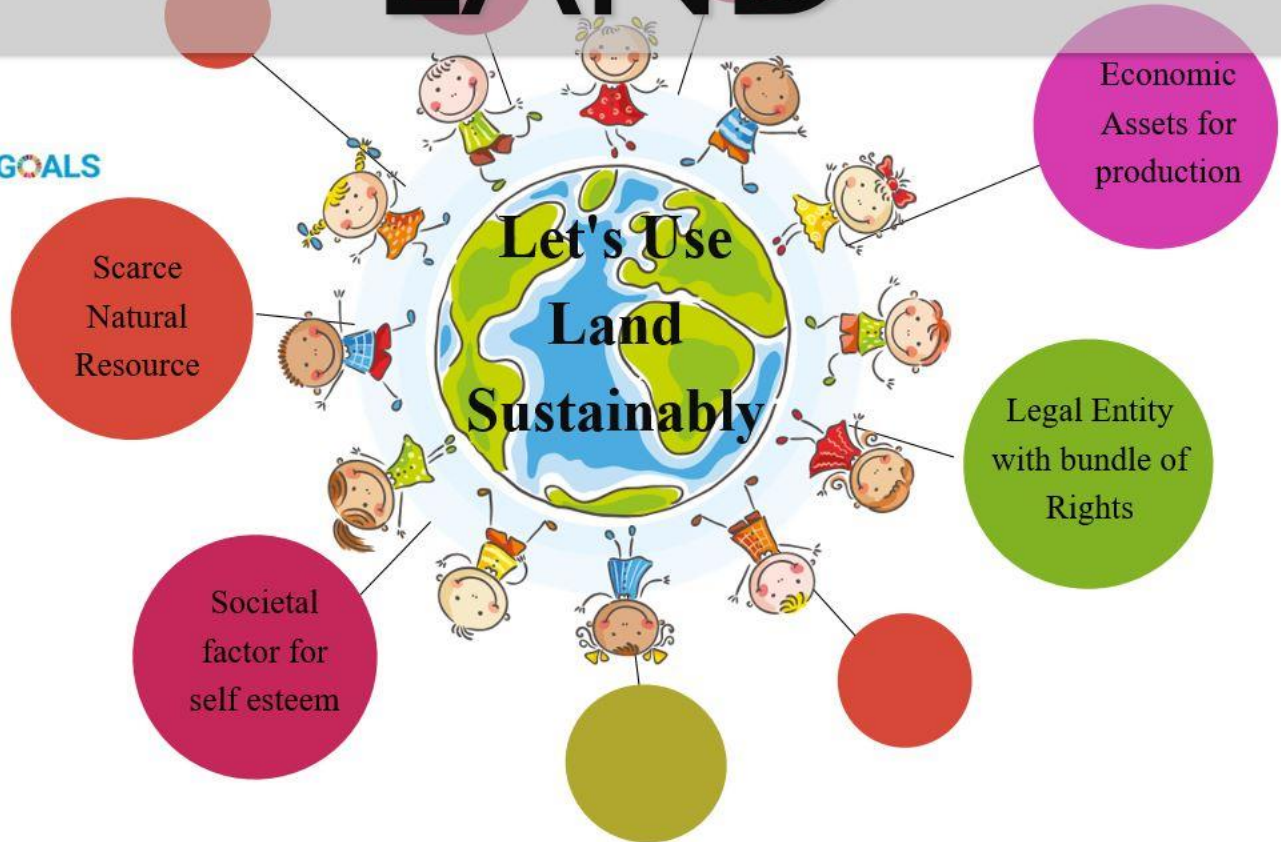
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LAND

SUSTAINABLE DEVELOPMENT GOALS



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Working Procedure

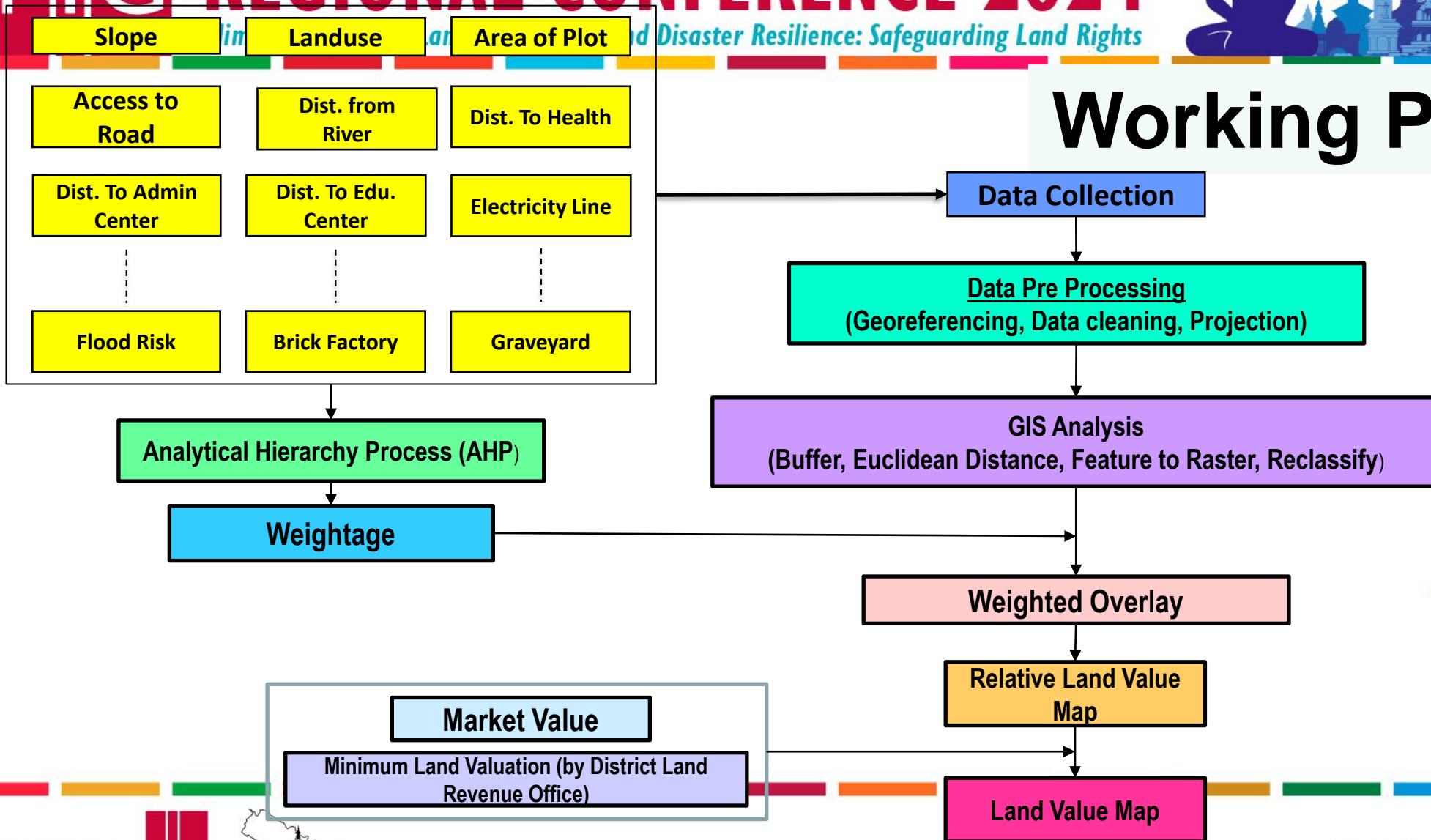




FIG Working Week 2024

19-24 May

Accra, Ghana

Your World, Our World:
Resilient Environment
and Sustainable
Resource Management
for All

Criteria/Factor and Sub criteria

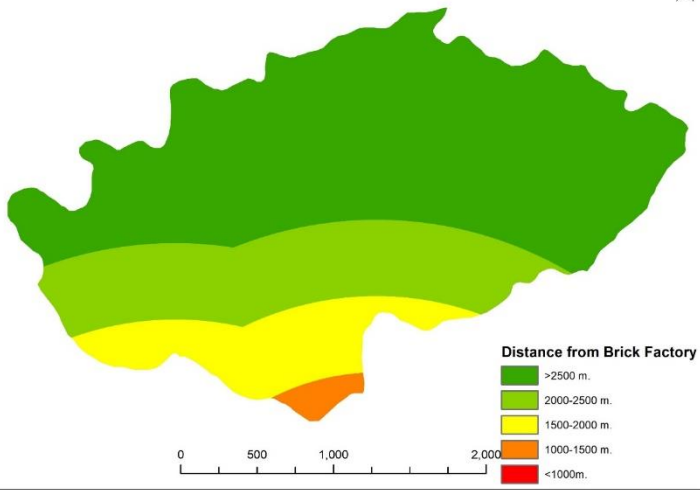
| जग्गाको भौतिक अवस्थिति (Physical Factor) | सामाजिक आधार (Social Factor) | कानूनी मापदण्ड (Legal Factor) | आर्थिक आधार (Economic Factor) | वातावरणीय जोखिम (Environmental Factor) |
|----------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------|
| 1. Elevation (समुद्री सतहदेखिको उचाइ) | 1.Roads (सडकको सन्निकटता) | 1. National Road (बाटोको मापदण्ड) | 1. Proximity from Land Development Projects (जग्गा विकास आयोजनाको सन्निकटता) | 1. Proximity to River/Lake (बाढी डुवानको जोखिम) |
| 2.Slope (धरातलीय स्वरूप) | 2.Administrative Centers (प्रशासनिक क्षेत्रको सन्निकटता) | 2.Industry/Factory (उद्योगको मापदण्ड) | 2. Proximity from Industry/Factory (उद्योगको सन्निकटता) | 2. Proximity to Landslide prone area (पहिरोको जोखिम) |
| 3.Aspect/Orientation (जग्गाको तर्फ) | 3. Parks/Open Space (पार्क/खाली क्षेत्रको सन्निकटता) | 3.River/Lake (नदी तालको मापदण्ड) | 3. Proximity from Business Centre (व्यापारिक केन्द्रको सन्निकटता) | 3. Proximity to Fault Zone (फ्ल्ट जोनको सन्निकटता) |
| 4. Land Use (भूउपयोग क्षेत्र) | 4. Hospital and health facility (स्वास्थ्य संस्थाको सन्निकटता) | 4. Smart City (स्मार्ट सिटीलगायतको मापदण्ड) | | 4. Proximity to Industry/Factory (औद्योगिक निष्काशनको जोखिम) |
| 5. City View/Natural View (जग्गाको अवस्थिति) | 5. University/College/school (शिक्षा क्षेत्रको सन्निकटता) | 5. Restriction to build house (घर बनाउन रोक्का) | | 5. Proximity to graveyard (शवदाह क्षेत्रको सन्निकटता) |
| 6. Area of the plot(क्षेत्रफल) | 6. Shopping Centers (डिपार्टमेन्ट सेन्टरको सन्निकटता) | 6. Electricity lines (विद्युतीय तारको मापदण्ड) | | |
| 7. Shape of the plot (जग्गाको आकार) | 7. River/Lake (नदी, तालको सन्निकटता) | 7. Land Registration and Transfer Process (जग्गा दर्ता र हक कायमको प्रक्रिया) | | |
| 8. Frontage of the plot(मोहडा) | 8. Water Facility (पानीको पहुँच) | | | |
| | 9. Electricity Facility (विद्युतको पहुँच) | | | |
| | 10. Sewerage Facility (ढलको सुविधा) | | | |
| | 11.Population Density (बसोबासको प्रकृति) | | | |
| | 12. Type of Society (समाजको बनावट) | | | |
| | 13. ... (जग्गाको ...) | | | |



| SN | Factors | Score | | | | | Criteria Weight |
|----|--------------------------------|------------------|------------------|---------------|------------------------|------------|-----------------|
| | | 5 | 4 | 3 | 2 | 1 | |
| 1 | Slope | <10° | 10° - 15° | 15° - 20° | 20° - 25° | > 25° | 0.1 |
| 2 | Land use | Comm. | Res. | Ind. | Agri. | Other | 0.15 |
| 3 | Area of Plot (Anna) | 3-4.25 | 4.25-6 2.25-3 | 6-8 | >8 | <2.25 | |
| 4 | Road Access | National Highway | Feeder Road | District Road | Municipal/Village road | Untouched | 0.1 |
| 5 | Administrative Center (meters) | <100 | 100-200 | 200-500 | 500-1000 | >1000 | 0.15 |
| 6 | Health Post | <100 | 100-200 | 200-500 | 500-1000 | >1000 | 0.08 |
| 7 | Educational Center | <100 | 100-200 | 200-500 | 500-1000 | >1000 | 0.08 |
| 8 | River | >20 | | | | <20 | 0.05 |
| 9 | Electricity Line | >11 | | | | <11 | 0.05 |
| 10 | Flood Risk | FL+200 | FL+150 | FL+100 | FL+50 | Flood zone | 0.05 |
| 11 | Risk (Brick Factory) | >2500 | 2000-2500 | 1500-2000 | 1000-1500 | <1000 | 0.05 |
| 12 | Risk (Graveyard) | >500 | 200-500 | 100-200 | 50-100 | <50 | 0.06 |

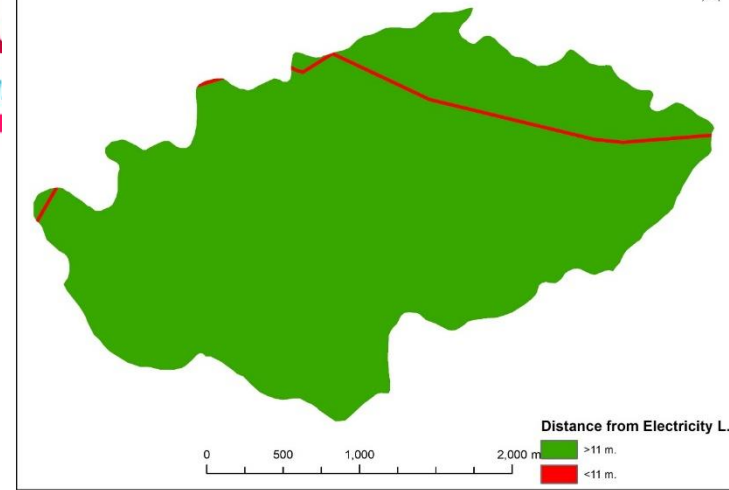
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Land Value Map Based on Distance from Brick Factory
Changunarayan Municipality Ward No. 4

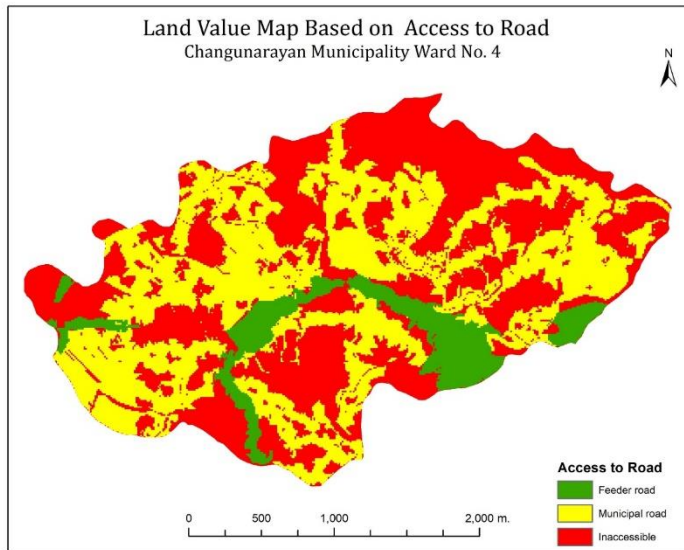


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Water Resilience: Safeguarding La

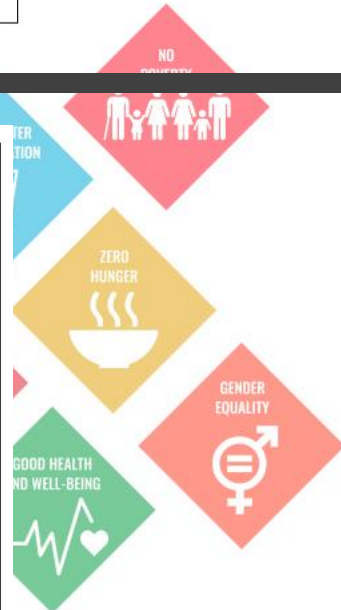
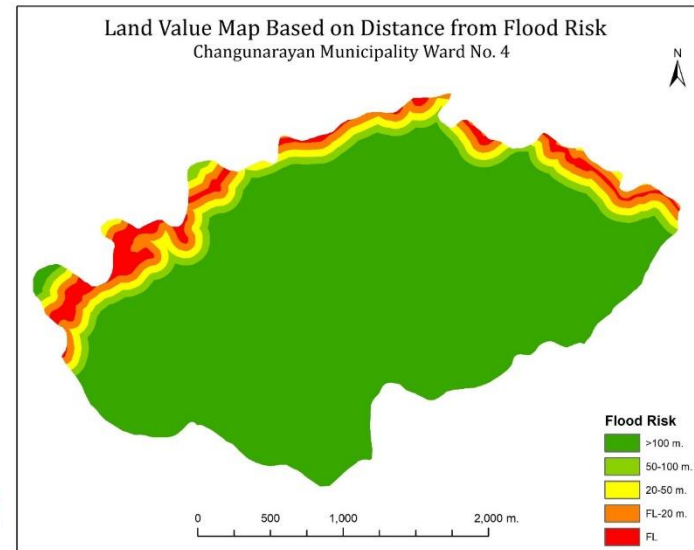
Land Value Map Based on Right of Way of Electricity Line
Changunarayan Municipality Ward No. 4



Land Value Map Based on Access to Road
Changunarayan Municipality Ward No. 4



Land Value Map Based on Distance from Flood Risk
Changunarayan Municipality Ward No. 4



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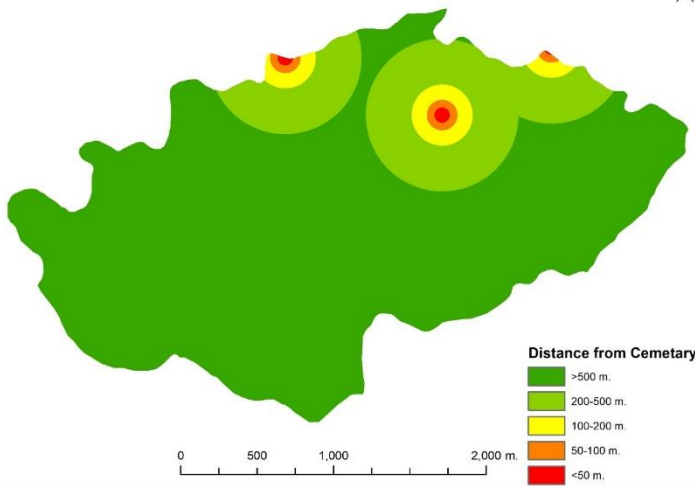


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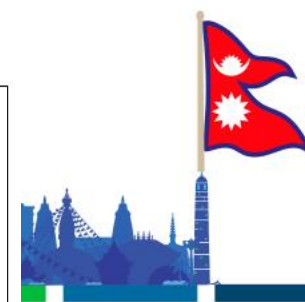
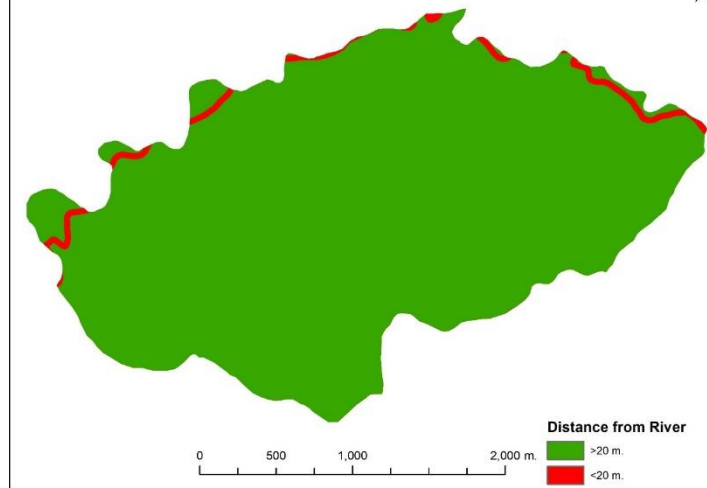
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Land Value Map Based on Distance from Cemetery
Changunarayan Municipality Ward No. 4

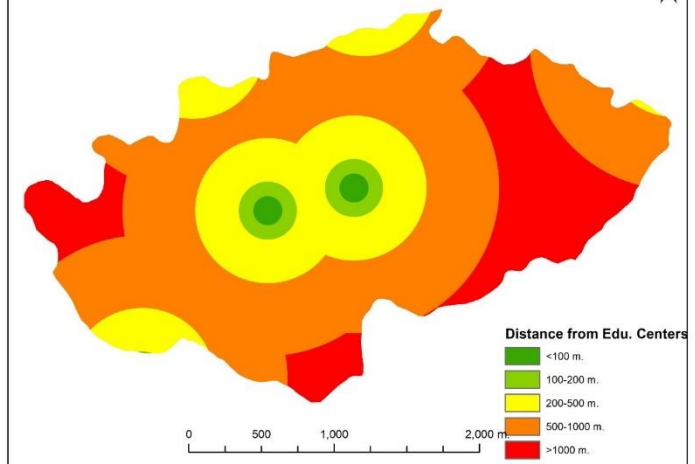


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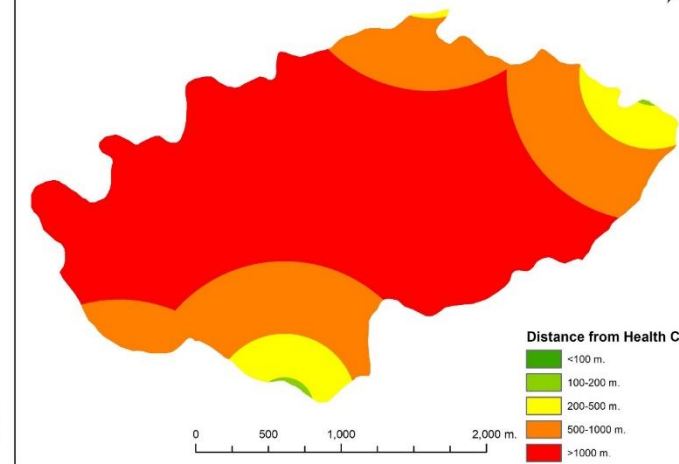
Land Value Map Based on Right of Way of River
Changunarayan Municipality Ward No. 4



Land Value Map Based on Distance from Educational Centers
Changunarayan Municipality Ward No. 4



Land Value Map Based on Distance from Health Centers
Changunarayan Municipality Ward No. 4



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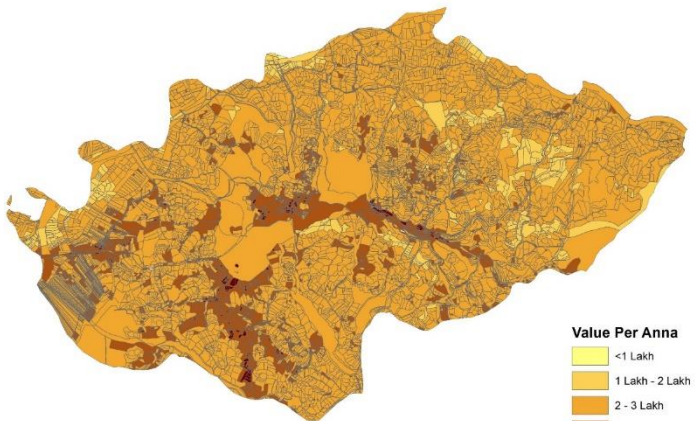


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FIG

Land Value Map (Minimum Rate)
Changunarayan Municipality, Ward no. 4

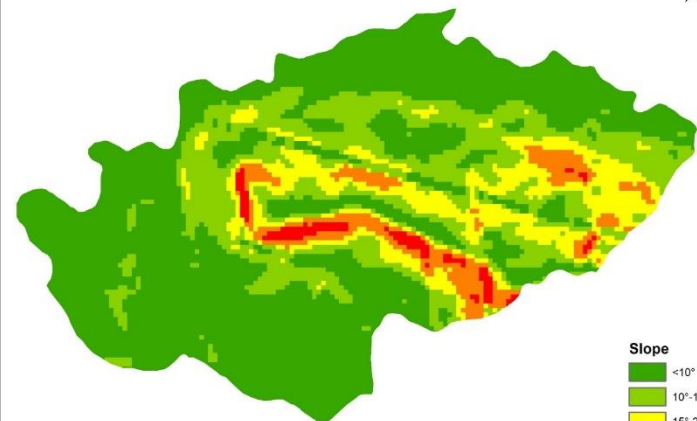


Value Per Anna
<1 Lakh
1 Lakh - 2 Lakh
2 - 3 Lakh
3 - 4 Lakh
> 5 Lakh

0 500 1,000 2,000 m.

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Land Value Map Based on Slope
Changunarayan Municipality Ward No. 4



Slope
<10°
10°-15°
15°-20°
20°-25°
>25°

0 500 1,000 2,000 m.

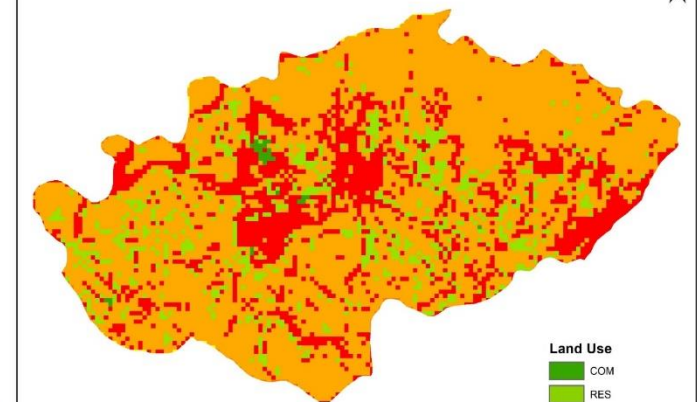


Study Area
Changunarayan Municipality, Ward no. 4



0 500 1,000 2,000 m.

Land Value Map Based on Land Use
Changunarayan Municipality Ward No. 4

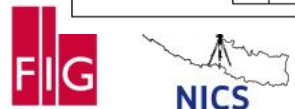


Land Use
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RES
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HYD/PUB/FOR/MIN

0 500 1,000 2,000 m.



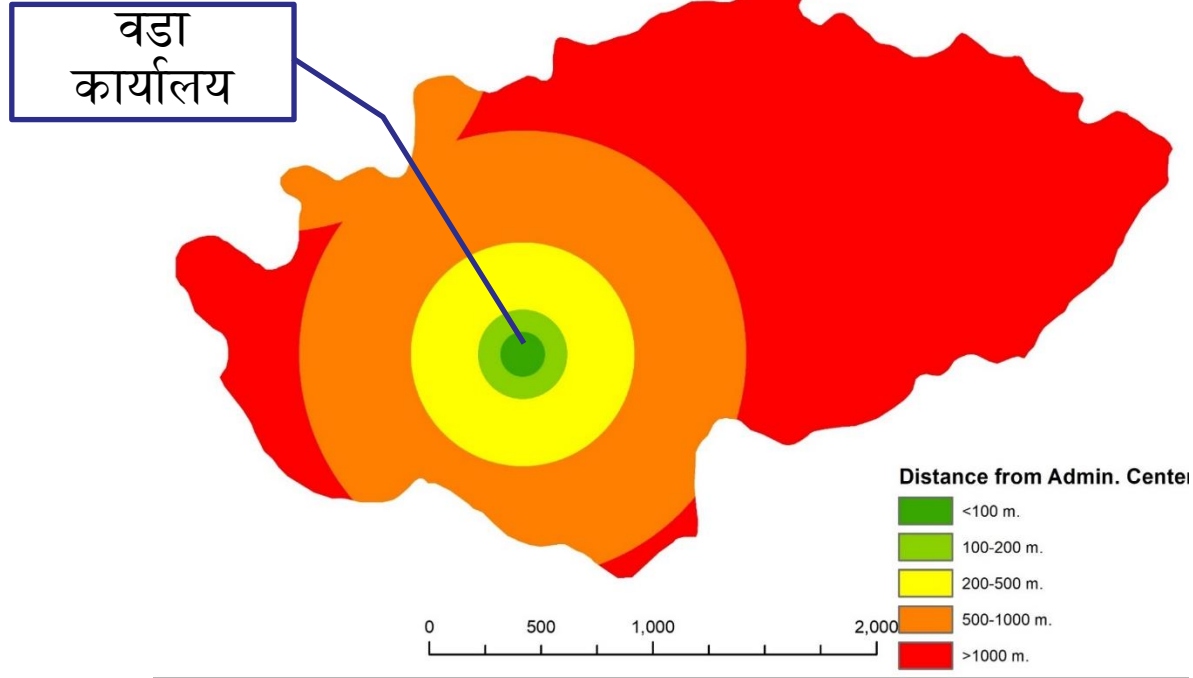
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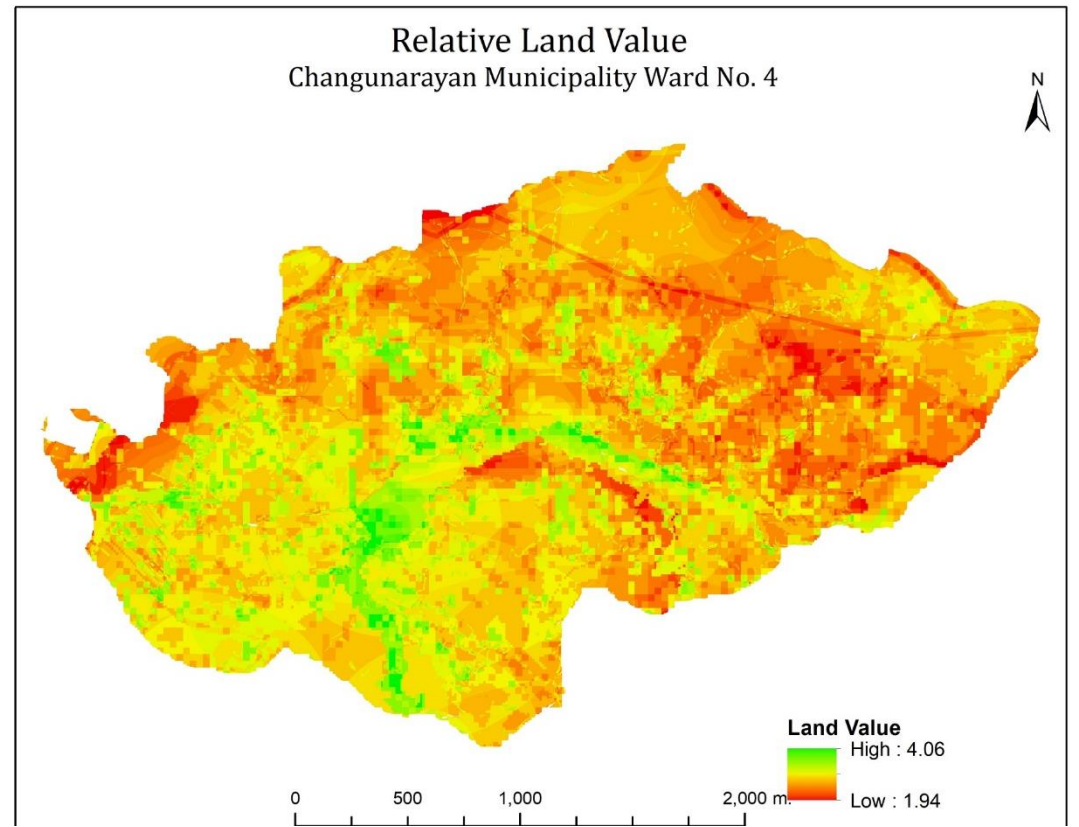
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Land Value Map Based on Distance from Administrative Centers
Changunarayan Municipality Ward No. 4



Relative Land Value
Changunarayan Municipality Ward No. 4



सूचकहरू

- भिरालोपन (Slope)
- भू-उपयोग क्षेत्र
- कित्ताको क्षेत्रफल
- सडक बाटोको अवस्था
- प्रशासनिक केन्द्रको सन्निकटता
- स्वास्थ्य संस्थाको सन्निकटता
- शैक्षिक क्षेत्रको सन्निकटता
- खोलाको मापदण्ड
- विद्युतीय लाईनको मापदण्ड
- बाढीको जोखिम
- औद्योगिक क्षेत्रको जोखिम
- शवदाह क्षेत्रको दुरी

GIS based parcel-Wise valuation

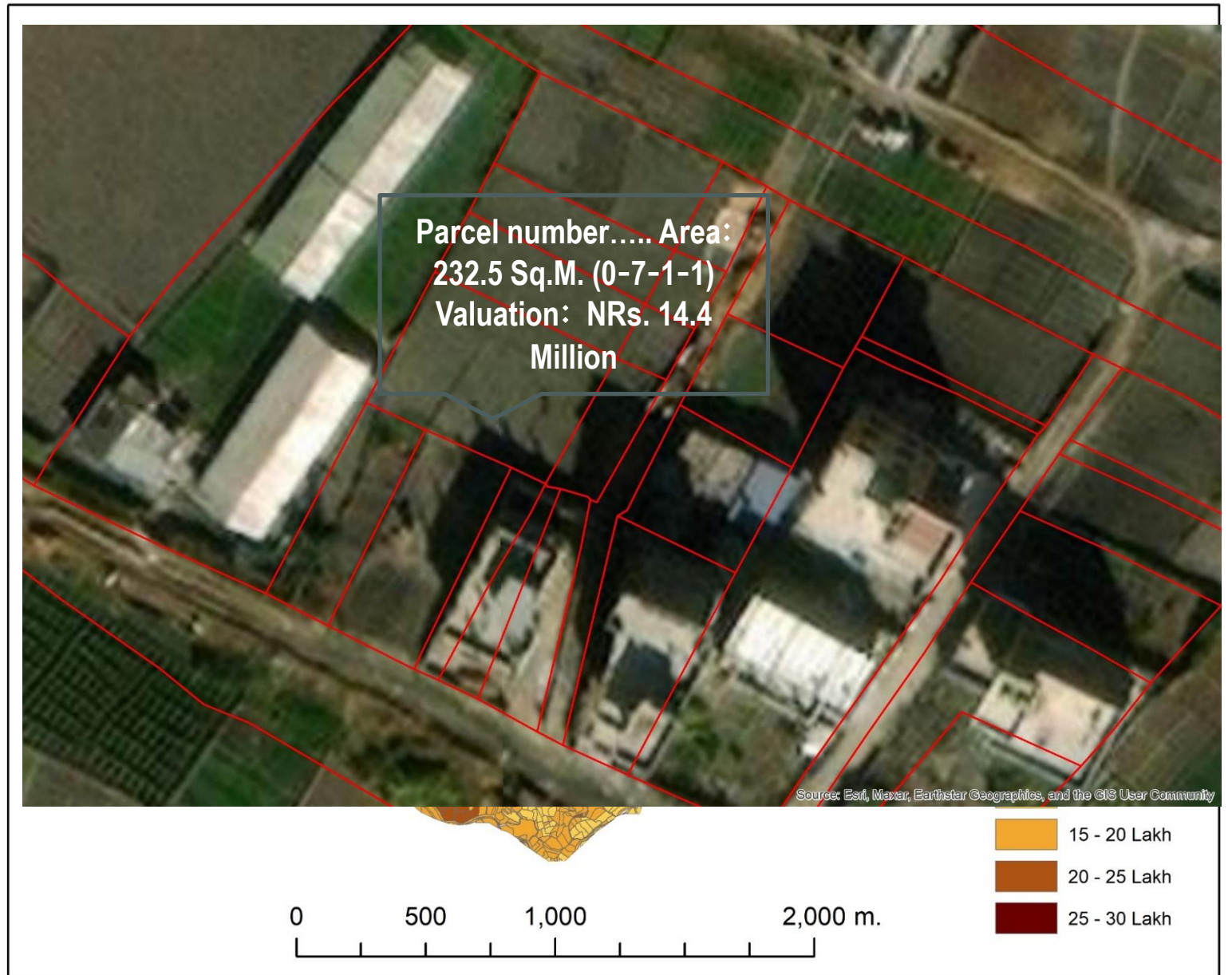
Total

- No. of Parcels : 17,200
- Area : 15,400 Ropani (783 Hectare)
- Min. Valuation (Land Revenue Office) : 45 Billion
- Market Value : 265 Billion

Revenue to be raised if 50 ropani (25437 sq.m.) land is transacted

8.2 Million (minimum valuation by Land Revenue Office)

49.2 Million (Market Value)





Revenue ↑

Expenses/Cost of Land Acquisition ↓

Efficient Resolution of Valuation Related Legal Issues (Bail..)

Efficient resettlement and rehabilitation

Land Market



Control of Arbitrariness of Intermediaries

Money Laundering ↓

Fraud and Tax Evasion ↓

Control on Speculation





| Activity | Refinement and modification of valuation basis, criteria and indicators | Refinement and modification of methods and techniques | <u>Piloting of the system</u> (data Updating, Validation) | Instructions to stakeholders to evaluate using the finalized indicators | Consolidation/amendment of related laws | Formation of Land Valuation Authority | Orientation and endorsement of land Valuation system | Modification of valuation basis and criteria as per requirement |
|----------|-------------------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------|---------------------------------------|------------------------------------------------------|-----------------------------------------------------------------|
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| Stakeholders | Ministry of Land Management, cooperatives and poverty alleviation | Office of prime minister and land revenue office | Parliament | Experts: GIS,IT, Land Management, Economics, Statistics + Private Sectors, Academia, Banking Sectors ++ |
|--------------|-------------------------------------------------------------------|--------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------|
|--------------|-------------------------------------------------------------------|--------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------|

Consensus in criteria and Indicators, demands reiteration and validation multiple times, Data (Availability, Accuracy and Updateness), Reluctance to Reformative Decision, Institutional Setup (Jurisdiction), Availability of Experts, Amendments to multiple laws, Strategies to adopt fair valuation (like revision of revenue) ++