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Land Use Zoning towards the Fulfillment of the 2030 Agenda for Sustainable Development

Punya P OLI, Nepal

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Administrative Divisions of Nepal

7 States

77 Districts

753 Municipalities/ Rural Municipalities

6 Metropolitan Cities

11 Metropolitan Cities

276 Municipalities

460 Rural Municipalities

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Nepal in brief

Located between India and China
with 26.5 million of population (as per population Census 2011)
and 147,181 square kilometers of area.

Nepal is situated within latitude $26^{\circ} 22' N$ to $30^{\circ} 27' N$ and of longitude $80^{\circ} 4' E$ to $88^{\circ} 12' E$.

The altitude ranges from a minimum of 60 meters to a maximum of 8848 meters whereas the climate varies with its topography.

The last census 2011 revealed that there are 123 languages being spoken in Nepal

Nepali stands as the official language of the country.

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Nepal in brief 2

There were recorded ten different religions, viz., **Hindu, Bouddhist**, Islam, Kirat, Christian, Prakriti, Bon, Jain, Bahai and Sikha respectively by their dominance in the last census 2011.

Nepal is rich in natural resources such as forest, water, mineral and bio-diversity. Forest covers approximately 39.6% land of the total area.

In reference to Human Development Report 2016 of the UNDP, Nepal's HDI is 0.558 (as of 2015).

Average Life Expectancy at birth, 2011 (years) - Total 66.6 - Male 65.5- Female 67.9

Population below the poverty line are about 23% in 2011.

Per Capita GDP, current price (NRs) (2016/17P) 90,521

Exchange rate (US\$:NRs) (2016/17P) 106.10

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Land Use Zoning of Municipality/ Rural Municipality commenced after decision of Land Use Policy 2012 and completed 21 districts and 10 district under progress out of 77 districts of Nepal. It involves preparation of land resources maps (administrative, geology, land utilization, soil, land system, land capability, land use zoning and superimposition of cadastral data with land utilisation and land use zoning at the scale of 1: 10,000 and Municipal profile) data base and reports for each Municipality. It is prepared after field and desk study of 0.5m resolution satellite imagery, spatial and other data and documents and field verification

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Background

Government is committed to fulfill the **2030 Agenda for Sustainable Development (SDG) 17 Goals**

Nepal is planning to meet SDG 17 goals and targets.
National Planning Commission, Nepal studied and published the Nepal's Sustainable Development Goals, Base line Report on June 2017.

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General

- The main aim of the study is to assign most optimal use of land resources, the land use zones and to assign land use to each cadastral parcel.
- During the study, new agricultural, socio economic data are also collected by questionnaires completed from experts and stakeholders and Focus Group Discussions (FGD) methods.
- A Municipality/ Rural Municipality Profile is prepared for each Municipality/ Rural Municipality incorporating land resources, administrative and socio economic data and shows the present development status of the Municipality/ Rural Municipality.
- It may need to improve the questionnaires to address all the 17 Sustainable Development Goals for Nepal.
- In this article, It is briefly described the land Use Zoning systems and status of data related to Sustainable Development Goals(SDG) 2030 and
- suggestions related to improvement of questionnaires and spatial data to be useful to Sustainable Development Goals(SDG) 2030.



Status and targets to fulfill SDG 2030

This national report delves into the current status of the proposed SDGs and their targets in Nepal, the enabling policy environment and existing institutions for their operationalization.

Nepal has following status and targets to fulfill the sustainable development following 17 goals

E. g. Goal 1 : SDG 1 proposes ending poverty in all its forms everywhere. It is targeted to decline from 23.8 percent to 5 percent by 2030.

Nepal has 96.2 percent enrollment and the literacy rate of 15–24 year olds at 88.6 percent and proposed targets for almost 100 percent enrolment and the completion of primary education by 2030

National (Preliminary) Report x the soil organic matter from 1 percent in 2014 to 4 percent in 2030.

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Methodology of Land Use Zoning

The municipal level land resources maps/database are prepared from rectified enhanced high resolution satellite images and the field collected data, sample and laboratory analyzed data.

Ortho-rectification of satellite using Ground Control Points (GCPs) collected through Differential Global Positioning System (DGNSS). The categories of data as per NLUP specification and data model.

The interpretation and feature extraction in terms of different units be validated through enough ground truths collected from extensive fieldwork.

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Methodology..2

The map layout and legends be as according to the map/ data model supplied by NLUP.

The land resources map must contain Hazard Risk Information as a separate layer.

The reports on each of the land resources information be cover details of the methodology adopted in preparation of the maps It should be in the format provided by the NLUP.

The output maps must be based on Modified Universal Transverse Mercator

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Methodology..4

The following contents for each municipal profile:

- 9 Forest and Biodiversity
- 10 Natural hazard and overall environment
- 11 Land systems, soils, land capability and other land characters
- 12 Present land use and land use zoning
- 13 Cadastral data
- 14 Agriculture and food production
- 15 Vegetable farming/fruit production
- 16 Poultry farming/fishing etc.

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Methodology..5

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The following contents for each municipal profile 2:

- 17 Livestock
- 18 Access to infrastructure and services
- 19 Industry
- 20 Social condition
- 21 Population characteristics
- 22 Economic condition
- 23 Heritage and Culture
- 24 Tourism
- 25 Hazard and Risk

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USE OF LAND USE ZONING DATA FOR EVALUATION OF SDG

Land resources mapping was carried out to determine the carrying capacity of the area, assigning optimum land use for each land parcel and land use planning/zoning.

They may be use to estimate of the status of sustainable development goals in the following way:

SDG 1 proposes ending poverty in all its forms everywhere. In the tarai and hills areas, landless people are generally in the extreme poverty and mountain area people having less than 1 ha productive land and without other employment are extreme poverty. **It can be estimated from present land use and cadastral data.**

SDG 2 proposes ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture. **The land capability data and present land use data will allow estimate the area of hunger/ food secured area along with the population data.**

SDG 3 aspires to ensure healthy lives and promote well-being for all people of all ages. **The infrastructure data, and data related to diseases from profile will indicate the situation.**

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USE OF LAND USE ZONING DATA FOR EVALUATION OF SDG 2

SDG 4 aspires to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. **The infrastructure data, and data related to education will indicate the situation.**

SDG 5 is about achieving gender equality and empowering all women and girls. **The census data use in profile will be useful to indicate status of girl or woman education. It may add to major crime situation in the profile.**

SDG 6 is about ensuring the availability and sustainable management of water and sanitation for all. **Basic water supply coverage, sanitation and use of latrines and connected to sewerage and garbage disposal system in urban areas, are recorded in the profile.**

SDG 7 aspires to access to affordable, reliable, sustainable and modern energy for all. **Electricity supply, petrol pumps, LPG depot etc. are shown as infrastructure and mapped, and use of energy is briefly assessed in the profile.**



USE OF LAND USE ZONING DATA FOR EVALUATION OF SDG 3

SDG 8 aspires for sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. **The factory, modern agriculture practice, plantation, farm etc are mapped and data recorded on the profile.**

SDG 9 aims for resilient infrastructure, inclusive and sustainable industrialization, and innovation. **The industry, communication towers, optical fiber route, road and railway network are shown and mapped.**

SDG 10 is about reducing inequality within and among countries.

SDG 11 aspires to make cities and human settlements inclusive, safe, resilient and sustainable. **The open space, park, forest are shown on present land use map. The squatter settlement may be classified separately.**

SDG 12 intends to ensure sustainable consumption and production patterns. **Same as SDG 8**

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USE OF LAND USE ZONING DATA FOR EVALUATION OF SDG 4

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SDG 13 calls for urgent action to combat climate change and its impacts. **It is contributing to carbon sink as it is shown in present land use Map.**

SDG 14 is about conserving and sustainably using the oceans, seas and marine resources for sustainable development, **and so, it is not relevant for Nepal.**

SDG 15 calls for protecting, restoring and promoting the sustainable use of terrestrial ecosystems, sustainably managing forests and halting biodiversity loss. **The present land use will indicate forest cover and classify as forest, community forest or national parks/sanctuary.**

SDG 16 calls for promoting peaceful and inclusive societies for sustainable development among others

SDG 17 is about strengthening the means of implementation and revitalizing the global partnership for sustainable development. , **and so, it is not relevant for local level zoning.**

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CONCLUSION AND RECOMMENDATION

The National Land Use Project completed about 25% territory of Nepal at 1:10,000 scale land use zoning works covering most productive land of target area using present specification.

It has more emphasis on present land use and soil mapping and later stage on risk mapping.

It may also need to give priority to infrastructure mapping and socio economic data collection so that it will also reflect the situation of sustainable development goals.

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