



Government of Nepal
Ministry of Federal Affairs and Local Development
Department of Local Infrastructure Development and Agricultural Roads
(DoLIDAR)

**APPROACH MANUAL
FOR
DISTRICT SMALL IRRIGATION MASTER PLAN**



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Foreword

Department of Local Infrastructure and Agricultural Roads (DoLIDAR) under Ministry of Federal Affairs and Local Development (MoFALD) has been playing a leading and vital role by facilitating local bodies for planning and implementing local infrastructural activities in the country. To accelerate the pace of rural development and reducing rural poverty, Government of Nepal has enacted Local Infrastructure Development Policy (LIDP) 2061. The policy states that DoLIDAR has mandate for supporting local bodies in implementation of local infrastructural activities including small irrigation projects.

Government of Nepal started allocating budget for small-scale irrigation through local bodies only since 2010/11. Nevertheless, its significant role in enhancing agricultural productivity especially of small and remotely located farmers has been well appreciated.

In our country's context of land morphology, topography, land fragmentation, remoteness and water availability often demands for small scale irrigation systems. Many such demands exist at local level but it is impossible to meet them due to the limited resources. The Local Self Governance Act (LSGA 1999) calls for need based and participatory planning of local development interventions including small irrigation. However, the tendency has been ad-hoc in planning of local infrastructure, often without objective prioritization. It has often been a challenge to address the needs of poor, disadvantaged and remotely located small holders who are often left out in development interventions. Therefore, a holistic planning is necessary which takes into account all possible irrigation systems and prioritize them with objective criteria through wider participation of beneficiary community and then plan and implement accordingly. For this District Small Irrigation Master Plan (DSIMP) is an important tool for the systematic planning and implementation of irrigation systems. To prepare DSIMP in a systematic manner, DoLIDAR has prepared this approach manual. This Approach Manual will provide details of steps, approaches and processes to be followed for developing DSIMP.

Finally, I would like to express my sincere gratitude to Swiss Agency for Development and Cooperation Nepal (SDC), HELVETAS Swiss Intercooperation Nepal, CARD consult Pvt. Ltd. and Technical Committee Member for their support and effort to develop this approach manual. We will welcome any constructive suggesting for its further improvement.

.....

Bhim Prasad Upadhyaya
Director General

Date:

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LIST OF ABBREVIATIONS

DDC	: District Development Committee
DIIPM	: District Indicative Irrigation Potential Map
DIM	: District Inventory Map
DoA	: Department of Agriculture
Dol	: Department of Irrigation
DoLIDAR	: Department of Local Infrastructure Development and Agricultural Roads
DSIMP	: District Small Irrigation Master Plan
DSIPP	: District Small Irrigation Perspective Plan
DTO	: District Technical Office
FMIS	: Farmer Managed Irrigation Systems
GIS	: Geographic Information System
GoN	: Government of Nepal
GPS	: Global Positioning System
IPFC	: Integrated Plan Formulation Committee
LIDP	: Local Infrastructure Development Policy
LSGA	: Local Self-Governance Act
MoFALD	: Ministry of Federal Affairs and Local Development
Mol	: Ministry of Irrigation
NGO	: Non-Governmental Organization
NITP	: Non-conventional Irrigation Technology Project
NFIWUAN	: National Federation of Irrigation Water Users' Association Nepal
PNA	: Participatory Need Assessment
SSIS	: Small Scale Irrigation System
VDC	: Village Development Committee
V-WASH-CC	: VDC Level Water and Sanitation Hygiene Coordination Committee
WFP	: World Food Program

GLOSSARY OF TECHNICAL TERMS AND CONCEPTS

Demand Form refers to a demand collection format for potential irrigation schemes. It is filled up by the prospective farmers of the potential irrigation scheme. It includes information like location of the scheme, command area, socio-economic information of the farmers and other relevant information.

Executing Agencies refer to the DDC or DoLIDAR, who execute the preparation of DSIMP of the district.

Farmer Managed Irrigation Systems refer to the irrigation systems constructed and managed by farmers at local level. The basic concept of FMIS was developed from traditional practice of managing irrigation water for agriculture within the capacity, knowledge and resources of farmers.

Food Security according to the World Food Summit 1996 is defined as “all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”.

Local bodies refer to district and village development committees (DDC and VDCs)

Non-Conventional Irrigation Technology refers to any irrigation technology, which differs from the conventional canal systems and is relatively modern methods. It includes a range of water acquisition, distribution, and application technologies such as sprinkler, drip, tank, pond, pipe, hose, and treadle pump etc. It is based on either harvesting of local springs, small scale lift from near-by river or stream, rainwater or surface water harvesting.

Participatory Approach refers to an approach in which everyone who has a stake in the intervention has a voice, either in person or by representation. This helps in getting the real potential and need for the intended development.

Planners refer to a group of experts representing a consulting firm assigned for preparation of DSIMP.

Prioritization Criteria refer to a set of parameters which assign certain score to a potential project which when summed is used to prioritize projects for funding and implementation by DDC.

Qualifying Criteria refer to the conditions that must be fulfilled by any potential schemes to qualify itself as a small scale irrigation system.

Small farmers are defined as the subsistence farmers holding land from 0.5 to 1.0 ha in size. They comprise 27 percent of rural families and farm 24 percent of the total. They are mostly subsistence producers with inadequate and marginal land with minimal all year round irrigation facility.

Small scale irrigation system is defined as a scheme that serves a command area less than 25 ha in the hills and less than 200 ha in the Tarai.

Water Availability refers to the discharge of water available for the command area along with the seasonal availability of the source.

1. BACKGROUND

Agriculture is the mainstay of Nepalese economy contributing 35 percent of the Gross Domestic Products (GDP) and providing livelihoods for about two third of the population. However, it depends largely on monsoon rains from June to September, when more than three quarter of annual rainfall occurs. Among total cultivable lands of 2.64 million hectares, only about two third (1.766million hectares) is irrigable of which only 46 percent has year round irrigation facility¹. Regulated and round the year irrigation systems are therefore crucial to improve agricultural productivity, particularly in the long dry season but also during dry spells in the wet season.

Farmer managed irrigation has been in practice since many generations - in Nepal. Over the past 200 years, farmers in both hill areas and the Terai have developed simple irrigation systems based on diversion of water from seasonal or permanent streams and rivers². However, such systems are in need of frequent maintenance and are often not reliable.

Small scale irrigation is crucial for small farmers as about half of the agricultural households hold land less than one ha³. Isolation, small landholdings, effects of climate change, lack of access to technology and inputs has made livelihoods of small farmers vulnerable. A study in 2005 on irrigation and poverty showed that the incidence of poverty in irrigated areas is half than that in rain-fed areas and that access to irrigation water mitigates poverty⁴. Reliable access to irrigation is therefore instrumental in helping small farmers to improve the productivity of their land thereby enabling them to meet their food requirements as well as to generate additional income to improve their living conditions.

The Irrigation Policy 2013 (revised) of Nepal defines small irrigation as systems having a command area of less than 25 ha in the hills and 200 ha in the Tarai. With the Local Infrastructure Development Policy (2004) identifying small scale irrigation systems as local infrastructure, the responsibility for small-scale irrigation has moved from the Ministry of Irrigation (MoI) and the Department of Irrigation (DoI) to the Ministry of Federal Affairs and Local Development (MoFALD) and Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR). Small irrigation development through local bodies is a new initiative and needs consolidation and harmonization. It needs to be developed as a sub sector under local infrastructure for which a master plan based intervention is an important element. This Approach Manual provides approaches and processes to be followed in developing District Small Irrigation Master Plan (DSIMP).

2. RATIONALE:

Government of Nepal started allocating budget for small-scale irrigation through local bodies only since 2010/11. Nevertheless, its significant role in enhancing agricultural

¹Development of Database for Irrigation Development in Nepal – DoI 2007

² Irrigated Agriculture And Water Resources Assessment Report, 2012 for Preparation Of Nepal Agriculture Development Strategy

³ Nepal Living Standard Survey, 2010/11

⁴The Role of Infrastructure in Mitigating Poverty Dynamics: The Case of an Irrigation Project in Sri Lanka -Yasuyuki Sawada et and all 2008

productivity especially of small and remotely located farmers has been well appreciated. Contrary to the policy provision, three agencies, the DoI (for non-conventional), Department of Agriculture (DoA) and DoLIDAR are involved in small-scale irrigation development.

Land morphology, topography, land fragmentation, remoteness and water availability often demands for small scale irrigation systems. Many such demands exist at local level but it is impossible to meet them due to the limited resources. The Local Self Governance Act (LSGA 1999) calls for need based and participatory planning of local development interventions including local infrastructure. However, the tendency has been ad-hoc in planning of small irrigation infrastructure, often without objective prioritization. It has often been a challenge to address the needs of poor, disadvantaged, women and remotely located small land holders who are often left out in development interventions. Therefore, a holistic planning is necessary which takes into account all possible irrigation systems and prioritize them with objective criteria through wider participation of beneficiary community in an inclusive way and then plan according to the resources availability for next five years. The preparation of a short term master plan (five year in details with projects and resources) and medium and long term plans (indicative plan with inventory of projects) is essential in order to address the highly prioritized needs in the small irrigation sector. Hence, DSIMP is taken as an important tool for the systematic planning and implementation of irrigation systems. It is a strategic long-term plan that helps the DDC to:

- Address the people's voice objectively in respect to providing small irrigation facilities.
- Rationally allocate its resources in the small irrigation sub sector.
- Formulate a harmonized annual investment plan with other small irrigation actors.
- Keep track of the small irrigation coverage and the demand.
- Ensure Gender equity and social inclusion in the provision of small irrigation facility.

DSIMP is an important tool to develop small irrigation as a sub sector in a district. Besides, it is also with the spirit of Irrigation Policy 2013 (revised) which calls for small irrigation master plans at national and district level for development of the sector.

3. OBJECTIVE

The overall objective of this approach manual is to guide the entire development process of DSIMP for local bodies, DoLIDAR and others concerned agencies in Nepal in a common standard format. The specific objectives are:

- To provide a systematic step wise approach for preparation of
 - District Indicative Irrigation Potential Map,
 - District Irrigation Inventory,
 - District Small Irrigation Perspective Plan, and
 - District Small Irrigation Master Plan.

- To provide a general framework for time and human resources required for development of DSIMP.
- To provide a framework for monitoring the whole process of DSIMP preparation.

4. DECISION PROCESS AND ITS OWNERSHIP

According to LSGA and Local Infrastructure Development Policy (LIDP -2061) local infrastructure development and management are fully devolved to local bodies. The responsibility of development and implementation of DSIMP is with DDCs. However, DoLIDAR and other concerned agencies including donor supported small irrigation projects could also contribute to develop DSIMP with the request of concerned DDCs. In any case DDCs shall own the whole process of DSIMP development and the product. Following will be the decision and endorsement process:

- DDC takes the decision for development of DSIMP.
- VDCs collaborate with DDC in collecting and verifying irrigation demands, their prioritization and planning.
- DDC submit the Master Plan in the District Council as per the LSGA and gets approval.
- DDC collaborates with different small irrigation actors in the district to implement the master plan through the District Development Plan.

It is important to note that VDCs and DDCs must implement irrigation projects that are mentioned in the Master Plan approved by the District Council.

5. APPROACHES

The approaches detailed in the subsequent sections are binding to both executing agencies and planners and shall be adhered to when developing DSIMP.

The approach outlined in figure 1 and the details in section 7 comprises the process to be followed by the planners. Following are the key products:

- I. Inception report based on the secondary information.
- II. Indicative Irrigation Development Potential Map which clearly indicates the existing growth centers and the areas of various development potentials (e.g. high value crops, agro-based industry, etc.).
- III. District Inventory Map of existing SSIS which clearly shows the location, type and coverage of the existing irrigation systems in the district.
- IV. District Small Irrigation Perspective Plan which shows the prioritized list of all irrigation systems in the district to be developed within short, medium and long term.
- V. District Small Irrigation Master Plan which shows the prioritized list of small irrigation systems that will be implemented within five years.

The preparation of DSIMP shall follow an inclusive process. This shall be ensured right from the selection of an inclusive study team. The prioritization of the identified schemes shall come into consideration the inclusion issue by allocating adequate wattage in the selection criteria. Additionally, the preparation of DSIMP takes a participatory planning process. This will provide a space to the beneficiary community to discuss and resolve possible related conflicts by themselves.

DSIMP will be effective after approval of DDC and finally it must be endorsed from District Council within one year after approval of DDC. Every five years, the DDC gets an opportunity to revise the small irrigation perspective plan. The DDC may revise it if the district development potentials have changed. It should be done just before the preparation of the Master Plan for the second term. The approval of the Master Plan ensures that a consensus is reached among all participating VDCs regarding the selection of SSIS for the next five-year term. DSIMP could also be prepared concurring with the five year tenure of the District Council.

The figure in section 6 shows the logical flow of the processes for the preparation of the Master Plan.

6. THE APPROACH FLOW CHART

The approach is presented below as a flow chart.

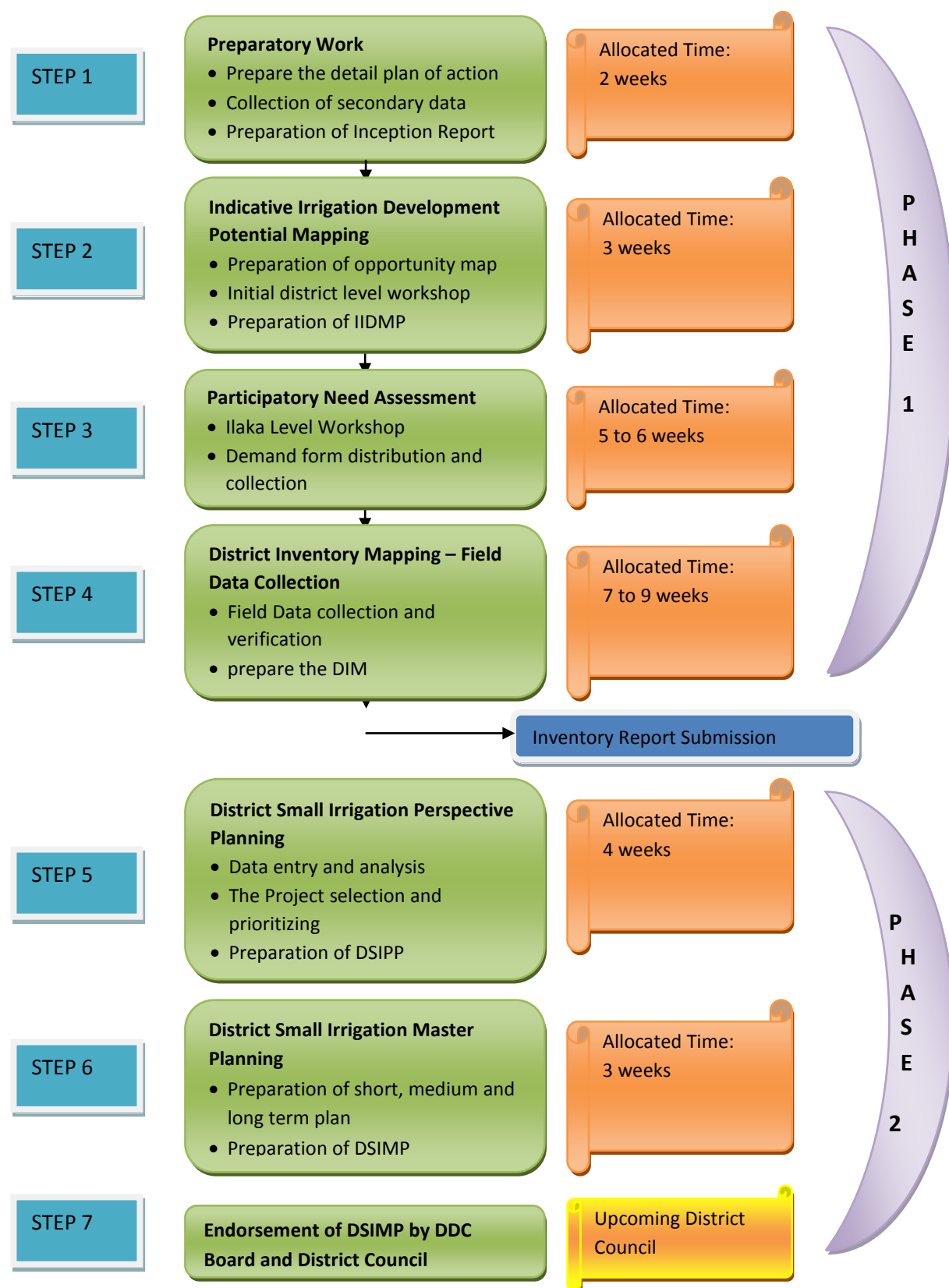


Fig 1: Flow Chart of Entire Process

7. DETAIL ACTIVITIES

Preparation of DSIMP is carried out in two phases with interconnected activities. Phase 1 comprises the preparation of work plan, preparation of IIDPM, Participatory need assessment and inventory mapping based on field work and data collection. Phase 2 comprises the analysis, preparation of district small irrigation perspective plan and preparation of DSIMP. The detailed activities to be carried out during the preparation of DSIMP are described below:

PHASE 1

STEP 1: - Preparatory Work

This step includes the preparation of action plan with collection of secondary data and preparation of inception report. The detailed steps are:

- i. Prepare the matrix of action plan to be carried out for the preparation of DSIMP.
- ii. Allocate the resources to be mobilized for the preparation of DSIMP.
- iii. Select/assign working team/service provider/consultant
- iv. Collect secondary information from various sources (e.g. periodic plan, district and VDC profiles, sectorial plans, web pages, and other relevant documents related to the district data especially on agriculture and irrigation).
- v. Prepare and submit inception report to executing agency (DDC, DoLIDAR and other).
The report shall contain the detail of understanding of the terms of reference, proposed methodology, time frame etc. It is important to note that the time schedule would depend upon the features and character of the district.

STEP -2: Indicative Irrigation Development Potential Mapping (IIDPM)

This step includes the preparation of opportunity map from secondary data, mobilization of team to the district, conduction of district level workshop with sharing of information, discussion of prioritizing criteria, and collection of secondary data available within the district. This step also includes preparation of IIDMP based upon the opportunity map and its discussion in the workshop. The detail steps are:

- i. Prepare opportunity map for agriculture production and agro based enterprises. Opportunity for agriculture production and agro-based industry shall be identified from secondary data collected in step 1.
- ii. Orient the team and mobilize them to the district for the district level workshop.
- iii. Organize an initial district level workshop with DDC/DTO representatives, Division office of irrigation and water supply representatives, VDC secretaries, NFIWUAN, representatives of political parties and other stakeholders.
In the workshop, information regarding the process of DSIMP preparation, its ownership and authorization, potential of agriculture and agro based enterprise development, the opportunity map, qualifying criteria and prioritization criteria etc. shall be shared and discussed.

Qualifying Criteria: Command Area should be

- 5 ha to 25 ha in the hills.
- 10ha to 200 ha in the Tarai.

The project prioritizing criteria in common is listed below and should be discussed not limiting within it.

Project prioritizing criteria

S.N.	Criteria (Component)	Basis
1	Water Availability	<ul style="list-style-type: none"> • Quantity • Available for how many seasons
2	Source of Water	<ul style="list-style-type: none"> • Source type • Source location (Water rights)
3	Size of Command Area	<ul style="list-style-type: none"> • Area • Accumulated (within one area) or scattered (divided in pockets)
4	Type of Project	<ul style="list-style-type: none"> • Existing government scheme to be rehabilitated • Existing FMIS to be rehabilitated • Potential extension of existing scheme • New scheme
5	Land Suitability	<ul style="list-style-type: none"> • Varying slope of land with agriculture potential
6	Poverty and Social inclusion	<ul style="list-style-type: none"> • Poverty in terms of land holding • Representation of socially excluded group
7	Accessibility	<ul style="list-style-type: none"> • Accessibility to nearest road head • Accessibility to market centre • Access to agriculture service centre
8	Length of Canal	<ul style="list-style-type: none"> • Construction length as factor of economic investment
9	Food Security	<ul style="list-style-type: none"> • DDC/WFP-list of food unsecure areas/VDCs (if available)
10	Environmental impacts	<ul style="list-style-type: none"> • Possibilities of adverse impacts
11	Others	<ul style="list-style-type: none"> • Discussed and mandated by DDC Council

(Refer Annex -1 for details of Project prioritizing criteria with score)

- iv. Collect demographic profile of VDCs, agricultural and geographical information of the district, and site situation in the workshop.
Collection of data and information from various sources should be mostly regarding area, location and significance of development potential areas such as extensive agriculture, extensive horticulture, livestock farming, high value cash crops, agro-based industries, centre for markets, including various service centers available in major market centre.
- v. Prepare IIDPM based upon the opportunity map, workshop and discussion.

Features in IIDMP maps

Data that should be collected are;

- Project area map with land use, geography at suitable scale (as high resolution as available)
- Climate and agro-ecology
- Topography
- Land use pattern
- Water resources
- Agriculture production and its potential area:
 - Major crops and production
 - Potential area with extensive agriculture
 - Extensive horticulture potential area
 - Classification of land based on the access of irrigation
 - Average annual cultivated area
- Farm inputs
- Landholding description
- Socio-economic profile:
 - Population and gender
 - Ethnic/caste composition
 - Literacy
- Service centers and facilities
- Agriculture service centre
- Irrigation potential based on past studies
- And other related data

STEP -3: Participatory Need Assessment (PNA)

This step includes the Ilaka level workshop with sharing of information and orientation on filling the demand form, inventory of water sources and existing irrigation infrastructure, collection of demand forms and sorting of demand based on qualifying criteria. The detailed steps are:

- i. Orient and mobilize team for Ilakalevel workshop and field verification
- ii. Organize Ilakalevel workshop with the involvement of VDC Secretaries, Integrated Plan Formulation Committee members, irrigation water user's committees/NFIWUAN, VDC Level Water and Sanitation Hygiene Coordination Committee (V-WASH-CC), political representatives and other relevant stakeholders.
Share information with Ilaka level representatives regarding the need of DSIMP, benefits and potentials in the workshop. The demand form should be distributed during the Ilakalevel workshop with full information.
Information regarding the filling up of demand forms for rehabilitation, maintenance and new schemes depending upon the need assessment should be facilitated in the workshop.
- iii. Collect inventory of water sources and existing irrigation infrastructure as much as possible in workshop so that it could be verified later on. Indicate water sources and existing irrigation in base map for field verification.
- iv. Disseminate the information regarding demand collection through mobilizing local radio stations, newspapers, information notice on VDC, ward office and other media as far as possible.
- v. Collect demand form within the allocated time frame for further analysis and verification (Refer Annex – 2 for demand form).

For the collection of demand forms and to establish a contact point at district level, appoint a representative from the planners who belongs to the district for better understanding of the local context and accuracy of the work for the whole period of DSIMP process. A local NGO working on agriculture field can be utilized as an option for the above mentioned work.

- vi. Shortlist the collected demand according to the qualifying criteria for field verification.

Note: The demand form sample is attached in annex 1. The form can be modified with basis of features of different districts.

STEP -4: Inventory Mapping – Field Data Collection

This step includes the mobilization of team for the verification of demand form and collection of existing field data in VDC level regarding the SSIS, analysis of data collected for the preparation of district inventory map. Every data collected and maps prepared are compiled and documented during this phase. First phase of DSIMP is completed and approved by the executing bodies. The detail steps are:

- i. Orient and mobilize team to VDC level for field data collection and field verification
The Overseer/Surveyor should command the team of field enumerators for the data collection. (Refer Annex – 3 for format for irrigation system inventory)
- ii. Verify the demanded irrigation systems in the field. Collect the field data according to prioritization criteria. Interact with the users, farmers and local people regarding the need, demographic distribution, social groups and others as far as possible during the field visit.
Record and note authentication, possibilities and other features with the basis of prioritizing criteria such as construction possibilities, slope, water sources, accessibilities and others of the new demands. Devise and test a standard form for all this record to be collected in the field before mobilizing to field.
- iii. Trace every existing and demanded irrigation system and source of water by GPS. Make inventory of existing irrigation systems by collecting the condition, command area, households, length, size, type, structures and other physical parameters of the system. Refer Annex 2 for inventory
- iv. Compile and analyze the collected data and prepare the District Inventory Map (DIM).
Plot canal alignment of existing irrigation projects in the map. Indicate important information such as their length in map either by legend or in tabular form.
- v. Carry out accessibility analysis after preparation of DIM in order to find the coverage of accessibility with the market centre and service centers as well as from the nearest road head for the transportation of agriculture products.

PHASE 2

STEP -5: District Small Irrigation Perspective Planning -VDC wise

This step includes the data entry and analysis for further study of detail project features of individual irrigation scheme, scoring of prioritizing criteria, and preparation of District Small Irrigation Perspective Plan. The detail steps are:

- i. Enter and analyze the data (in excel and using GIS applications wherever possible) of influence area of proposed and existing irrigation projects separately for new construction and rehabilitation.
- ii. Review and sort out the prioritizing criteria according to the data analyzed. Score each scheme with prioritization criteria based on available data and discussion report from the field.

The sample score board for the criteria is listed in annex3 which can be modified as per demand, agricultural and physical conditions (Mountain, Hill and Terai) of different districts (in most cases it can be stable, nevertheless discussion on some criteria with the client on unfavorable condition and issues raised in field if any may influence some modification)

- iii. Prepare District Small Irrigation Perspective Plan (DSIPP). DSIPP map should contain:
 - Existing small irrigation system
 - Proposed small irrigation system
 - Existing Growth Centre
 - Proposed Growth Centre, and
 - Other development potential areas

STEP -6: District Small Irrigation Master Planning

Process and Activities

This step includes the listing of all type of SSIS, financial allocation and preparation of master plan in terms of short, medium and long term plan. This step also includes the finalization of DSIMP. The detailed steps are:

- i. List all small scale irrigation system given in the Perspective Plan, under the following categories:
- ii. List all small scale irrigation system given in the Perspective Plan, under the following categories:
 - periodic maintenance
 - upgrading
 - rehabilitation
 - new construction
- iii. Rank all the above listed projects on the basis of prioritization criteria.

- iv. Assess projected amounts required for each year for SSIS, and discuss with DDC to approve the respective percentages which should be applicable for each category (new, rehabilitation, upgrading and periodic maintenance).
- v. Prepare short term (five year), medium term and long term plan. Refer annex 4 for DSIMP report
- vi. Prepare, at first, projected financial plan by considering all possible funding sources (Small irrigation grant, DDC development grant, VDC allocation, funds of Members of Parliament, DDC's and VDC's own resources, donor-funded project funds, etc.) for the next five years.
- vii. Prepare draft DSIMP based on this projected financial plan. Also prepare all the maps and analyzed data to present in district level workshop.
- viii. Conduct district level workshop and present draft DSIMP for agreement on master plan and the list of projects to be executed in next five years – collect final feedback.
- ix. Incorporate the feedback and finalize the DSIMP report. (Refer annex – 4 for Outline for the report on DSIMP)
- x. After compiling the comments and suggestion, a final presentation should be given district and central level for the finalization of the DSIMP

STEP -7: Endorsement of DSIMP by DDC council

Finally the DSIMP should be endorsed by the DDC council. DDC should submit the final DSIMP to the District Council for approval. DDC with the support of DTO shall brief the Council on the entire process of DSIMP preparation including scoring systems for prioritization. The DSIMP is finally endorsed by the District Council. After approval of the DSIMP from District Council, DDC should submit one copy of the DSIMP to the DoLIDAR for further planning and allocation of small irrigation grant from the center.

It is important to note that VDCs and DDCs must only implement irrigation projects that are mentioned in the Master Plan approved by the District Development Council.

8. HUMAN RESOURCES AND TIMING

In the context of DDC and DoLIDAR human resource available till date, DSIMP should be developed by hiring consulting team/firm (Refer Annex - 5 for sample ToR for DSIMP). The maximum time required for preparation of DSIMP is 25 to 27 weeks. Maximum human resources required are:

Regional planner (1)	: 1.5 person months
Civil or irrigation Engineer (1)	: 3 person months
Sociologist(1)	: 0.50 person months
Agronomist(1)	: 0.50 person months
Environmentalist (1)	: 0.50 person months
GIS Experts (1)	: 1.50 person months
Overseer/Surveyor (4)	: 8.4 person months
Field Enumerators (8)	: 9.80 person months
Contact/focal person at district	: 3 person months




Note: The above human resource required is calculated for a hill district with an average ~ 50 numbers of VDCs. This could be calculated according to the requirement on the basis of number of VDCs and accessibility of the district.

The step wise inputs and time are presented as follows:

Process Activities and	Human Resources	Time
Step 1	TL/Regional Planner (1 No.) Civil or Irrigation Engineer (1 Nos.)	2 weeks
Step 2	TL/Regional Planner (1 No.) Civil or Irrigation Engineer (1 Nos.) Sociologist (1 Nos.) Environmentalist (1) Agronomist (1) GIS Experts (1 Nos.)	3 weeks
Step 3	Civil or Irrigation Engineer (1 Nos.) Overseer/Surveyors (4 nos.) Contact/focal Person (1 no.)	5 to 6 weeks
Step 4	Overseer/Surveyor (4 Nos.) Field Enumerators (Nos. 4) GIS Experts (1 No.) Contact/focal Person (1 no.)	7 to 9 weeks
Step 5	TL/Regional Planner (1 No.) Civil or Irrigation Engineer (1 Nos.) GIS Experts (1 No.) Sociologist (1 Nos.) Environmentalist (1) Agronomist (1) Contact/focal Person (1 no.)	4 weeks
Step 6	TL/Regional Planner (1 No.) Civil or Irrigation Engineer (1 Nos.) GIS Experts (1 No.) Contact/focal Person (1 no.)	3 weeks
Step 7		Within One year

Time schedule for the activities to be performed

ACTION	Time Schedule																										
	Weeks																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Step 1	■	■																									
Step 2			■	■	■	■																					
Step 3						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Step 4												■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Step 5																											
Step 6																											
Step 7																											

Actual Time  Additional Time  Milestone 

All total 24 to 27 weeks is needed and should not be more than this.

Output Map of DSIMP (Annex – 6)

- Sheet 1: Location Map
- Sheet 2: Political Division Map
- Sheet 3: Rivers Map
- Sheet 4: River Basins Map
- Sheet 5: Land Use Map
- Sheet 6: Agriculture Based Opportunity Map
- Sheet 7: Slope Analysis Map
- Sheet 8: Climatic Zone Map
- Sheet 9: Population Density Map
- Sheet 10: Indicative Irrigation Development Potential Map
- Sheet 11: Potential Cash Crops Map
- Sheet 12: District Inventory Map
- Sheet 13: District Small Irrigation Perspective Plan Map
- Sheet 14: District Small Irrigation Master PlanMap

ANNEXES

ANNEX 1: PROJECT PRIORITIZING CRITERIA WITH SCORES

The prioritization criteria are based on the existing bio-physical and socio-economic conditions within the project area. The main components and their weightage are as follows:

For Hilly Area of Districts

S.N.	Criteria (Component)	Scoring	Weightage
1	Water Availability	10	10%
A	Quantity	5	
	Basin with Annual water Availability of more than 15000 m ³ /ha	5	
	Basin with Annual water Availability of less than 15000 m ³ /ha and more than 5000 m ³ /ha	3	
	Basin with Annual water Availability of less than 5000 m ³ /ha	1	
B	Availability	5	
	Available for All season (3 times)	5	
	Available for 2 season	3	
	Available for 1 season	1	
2	Source of Water	10	10%
A	Source Type	5	
	River	5	
	Spring Perennial	4	
	Spring Non-Perennial	3	
B	Source Location (Water Rights)	5	
	Within VDC	5	
	Outside VDC	2	
3	Size of Command Area	10	10%
A	Area	8	
	20ha to 25ha	8	
	15 to 20 ha	6	
	10 to 15 ha	4	
	5 to 10 ha	2	
B	Cluster	2	
	Accumulated (Within one area)	2	
	Scattered (Divided in Pockets)	1	
4	Type of Project	10	10%
	Existing Schemes by government to be Rehabilitated	10	
	Existing Schemes by FIMS to be Rehabilitated	8	

	Potential Extension of New Schemes	5	
	New Schemes	3	
5	Land Suitability	5	5%
	Slope less than 5%	5	
	Slope more than 5% and less than 10%	4	
	Slope more than 10% and less than 20%	3	
	Slope more than 20% and less than 30%	2	
	Slope more than 30%	1	
6	Poverty and Social Inclusion	20	20%
A	Poverty (Pattern of land holding)	10	10%
	More than 50% Households with land less than 5 ropanies	10	
	30-50% Households with land less than 5 ropanies	8	
	10-30% Households with land less than 5 ropanies	6	
	Less than 10% Households with land less than 5 ropanies	2	
B	Social Inclusion	10	10%
	Percentage of Socially excluded or disadvantaged group, More than 50%	10	
	Percentage of Socially excluded or disadvantaged group, 30 to 50%	7	
	Percentage of Socially excluded or disadvantaged group, 10 to 30%	4	
	Percentage of Socially excluded or disadvantaged group, less than 10 %	1	
7	Accessibility	10	10%
A	Accessibility with nearest road head	2.5	
	Distance less than 5 km	2.5	
	Distance more than 5 km and less than 10 km	2	
	Distance more than 10 km and less than 20 km	1.5	
	Distance more than 20 km	1	
B	Accessibility with nearby Market centre	2.5	
	Distance less than 5 km	2.5	
	Distance more than 5 km and less than 10 km	2	
	Distance more than 10 km and less than 20 km	1.5	
	Distance more than 20 km	1	
C	Access to Agriculture service centre	5	
	Distance to service center less than 10 km	5	
	Distance more than 10 km and less than 20 km	3	
	Distance more than 20 km and less than 40 km	2	

	Distance more than 40 km	1	
8	length of Canal	5	5%
	Length of Main Canal less than 500m	5	
	Length of Main Canal more than 500m and less than 2000m	4	
	Length of Main Canal more than 2000m and less than 5000m	2	
	Length of Main Canal more than 5000m	1	
9	Food Security	5	5%
	DDC/WFP-list of food unsecured areas/VDCs with Higher index	5	
	DDC/WFP-list of food unsecured areas/VDCs with Medium index	4	
	DDC/WFP-list of food unsecured areas/VDCs with Lower index	3	
10	Environment Impacts	5	5%
	No any adverse environmental impacts	5	
	Medium risk of adverse environmental impacts including landslides	2	
	High risk of adverse environmental impacts including landslides	0	
11	Others as discussed and mandated by DDC council	10	10%

For Terai Area of Districts

S.N.	Criteria (Component)	Scoring	Weightage
1	Water Availability	10	10%
A	Quantity	5	
	Basin with Annual water Availability of more than 150000 m ³ /ha		
	Basin with Annual water Availability of less than 150000 m ³ /ha and more than 50000 m ³ /ha	3	
	Basin with Annual water Availability of less than 50000 m ³ /ha	1	
B	Availability	5	
	Available for All season (3 times)	5	
	Available for 2 season	3	
	Available for 1 season	1	
2	Source of Water	10	10%
A	Source Type	5	
	River	5	
	Spring Perennial	4	
	Spring Non-Perennial	2	
B	Source Location (Water Rights)	5	
	Within VDC	5	
	Outside VDC	2	
3	Size of Command Area	10	10%
A	Area	8	
	150ha to 200ha	8	
	100 to 150 ha	6	
	50 to 100 ha	4	
	10 to 100 ha	2	
B	Cluster	2	
	Accumulated (Within one area)	2	
	Scattered (Divided in Pockets)	1	
4	Type of Project	10	10%
	Existing Schemes by government to be Rehabilitated	10	
	Existing Schemes by FIMS to be Rehabilitated	8	
	Potential Extension of New Schemes	5	
	New Schemes	3	
5	Land Suitability	5	5%

	Slope less than 1%	5	
	Slope more than 1% and less than 5	4	
	Slope more than 5% and less than 10	3	
	Slope more than 10% and less than 15	2	
	Slope more than 15%	1	
6	Poverty and social inclusion	20	20%
A	Poverty (Patter of Land Holding)	10	
	50% Households with land less than 1 ha	8	
	30 to 50% Households with land less than 1 ha	6	
	10 to 30% Households with land less than 1ha	4	
	Less than 10% Households with land less than 1 ha	2	
B	Social Inclusion	10	
	Percentage of Socially excluded or disadvantaged group, More than 50%	10	
	Percentage of Socially excluded or disadvantaged group, 30 to 50%	7	
	Percentage of Socially excluded or disadvantaged group, 10 to 30%	4	
	Percentage of Socially excluded or disadvantaged group, less than 10 %	2	
7	Accessibility	10	10%
A	Accessibility to nearest road head	2.5	
	Distance less than 1 km	2.5	
	Distance more than 1 km and less than 2 km	2	
	Distance more than 2 km and less than 5 km	1.5	
	Distance more than 5 km	1	
B	Accessibility to market centre	2.5	
	Distance less than 2 km	2.5	
	Distance more than 2 km and less than 5 km	2	
	Distance more than 5 km and less than 10 km	1.5	
	Distance more than 10 km	1	
C	Access to Agriculture service centre	5	5%
	Distance less than 5 km	5	
	Distance more than 5 km and less than 10 km	3	
	Distance more than 10 km and less than 20 km	2	
	Distance more than 20 km	1	
8	Canal Length	5	5%
	Length of Main Canal less than 500m	5	

	Length of Main Canal more than 500m and less than 2000m	4	
	Length of Main Canal more than 2000m and less than 5000m	2	
	Length of Main Canal more than 5000m	1	
9	Food Security	5	5%
	DDC/WFP-list of food unsecured areas/VDCs with Higher index	5	
	DDC/WFP-list of food unsecured areas/VDCs with Medium index	4	
	DDC/WFP-list of food unsecured areas/VDCs with Lower index	3	
10	Environment Impacts	5	5%
	No any adverse environmental impacts	5	
	Medium risk of adverse environmental impacts including landslides	2	
	High risk of adverse environmental impacts including landslides	0	
11	Others as discussed and mandated by DDC council	10	10%

ANNEX 2: PROJECT DEMAND FORM FOR DISTRICT SMALL IRRIGATION MASTER PLAN

जिल्लाको साना सिंचाई गुरुयोजनातर्जुमाको लागि योजनामागफारम :

(उपयुक्तकोठामा ठीक (✓) चिन्हलगाउनुहोस् ।)

मिति :

क योजनाको परिचय

योजनाको नाम :

जिल्ला : गा:वि: स. : वडा नं: : टोल :

सिंचाईको किसिम : कुलो सिंचाई खरी सिंचाई लिफ्ट यूव वेल घ ...
नयाँ पुन:निर्माण मर्मत

नजिकको यातायात पुग्ने : स्थान : दुरि (घण्टा) : (१ घण्टा \neq # $ls=d$)

नजिकको कृषि सेवाकेन्द्र, नाम : दुरि (घण्टा) : (१ घण्टा \neq # $ls=d$)

नजिकको बजारको, नाम : दुरि (घण्टा) : (१ घण्टा \neq # $ls=d$)

सदरमुकाम, नाम : दुरि (घण्टा) : (१ घण्टा \neq # $ls=d$)

ख. योजनाको प्राविधिकविवरण

प्रस्तावितमूलको नामस्थान : गा:वि: स. : वडा नं: :

मुहान : खोला खोल्सी मुल मगतअन्य

सिंचाई गर्न पानीको उपलब्धतावर्षभरि दुई भजन एक सि

पानीको परिमाण (लिटर प्रति सेकण्ड) :

मुहानविवाद छ छैन :

विवादभए कस्तो विवादहो खुलाउने:

प्रस्तावितमुहानको ५०० मि. तल/माथिअन्य योजना छ कि छैन, छ भने सोको विवरण:

सिंचाई हुने क्षेत्रफल (रोपनी) :

मूलनहर वापाइपलाइनको अनुमानित लम्बाई (मी.) :

लिफ्ट भएउचाई मिटरमा:

प्रस्तावित योजनाले कुनै वातावरणिय प्रभाव पार्छ वापादैन (वन, भूक्षय, पहिरो, नदी कटान आदि):

ग. योजनाको सामाजिकआर्थिक विवरण

लाभान्वित घरधुरी संख्या

दलित घरधुरी : जनजाती घरधुरी : अन्य घरधुरी : जम्मा घरधुरी :

जग्गाको विवरण:

५ रोपनीभन्दाकमजग्गाहुने घरधुरी : ५ देखि १० रोपनीजग्गाहुने घरधुरी :
 १० देखि २० रोपनीजग्गाहुने घरधुरी : २० रोपनीभन्दा बढी जग्गाहुने घरधुरी :
 जग्गानहुने घरधुरी :

मुख्यमुख्यबालीहरु :

वर्षे बालीलाग्ने क्षेत्रफल र बालीको किसिम :
 हिउदे बालीलाग्ने क्षेत्रफल र बालीको किसिम :
 चैते बालीलाग्ने क्षेत्रफल र किसिम :
 नगदे बालीको किसिम तथा संभाव्यता :

समुदायको संस्थागतअवस्था र प्रतिवद्धता

जलउपभोक्ता कृषकहरुको संगठन छ कि छैन :
 मर्मत, पुननिर्माण वानयाँनिर्माणमा लाग्ने लागतमा समुदायबाट सहभागिताव्यहोरिने प्रतिशत.....
 नगद श्रम
 प्रस्तावित योजनाको निर्माण । नवीकरण सुधार भएपछि त्यसको संरचनातथामर्मत संभार गर्ने पूर्व जिम्मेवारी
 लिनउपभोक्ताहरु तयार छन् छैनन्

प्रतिनिधिउपभोक्ताहरु

क्र. सं.	नाम	ठेगाना	हस्ताक्षर

घ. सम्बन्धितगा.वि.सको टिप्पणी

.....
 पदाधिकारीको नाम : पद :
 हस्ताक्षर : मिति :

ANNEX 3: FORMAT FOR IRRIGATION SYSTEM INVENTORY

Name of the Irrigation System					
Location of the Headworks/diversion (Coordinates)					
Easting		Northing		Elevation	
Name of the VDC		Village			Ward No.
Water Source Details		Name			
Water Availability					
For Full Irrigation		Only Partial Irrigation	No Irrigation Possible		
Monsoon					
Winter					
Spring					
Location of the Command Area (end of head reach canal)					
Coordinates	Easting	Northing	Elevation		
Head				m.	
Distance Command Area to:					
Road Head		Nearest Market	Market Name	Agri Service Centre	
	KM		Km		KM
	HRs		Hrs		HRs

Details of the Command Area										
Left Bank			Right Bank				Both Banks			
VDC					Village			Ward No.		
VDC					Village			Ward No.		
VDC					Village			Ward No.		
No. of HH with land in the command area										
Large Farmers* (% CA)							Small Farmers* (% CA)		Tenants %	
Irrigated (Ha.)										
Gross Area		Monsoon			Winter		Spring			
Cropping Pattern in %										
	Paddy	Wheat	Potato	Millet	Maize	Pulses	Oilseed	Vegetables	Other	
Monsoon										
Winter										
Spring										
System Details										
Main Canal					Branch Canal					
Length (m)	Capacity (Ips)			Nos		Total Length				
Water Distribution										
First come first served			Allocation According to Water rights/shares							

Water Availability	Monsoon		Winter		Spring		
	Good	Insufficient	Good	Insufficient	Good	Insufficient	
Head							
Middle							
Tall							
Overall condition of the irrigation system							
Good			Minor problems		Major Problems		
Type of Problems							
Hills							
Headworks/Diversion							
Landslides							
Cross Drainage							
Canal Leakage/Breaches							
Water Distribution							
Other							
			Tick Mark		Name of the Value		

ANNEX 4: SUGGESTED OUTLINE FOR THE REPORT ON DSIMP

The following outline may be followed while compiling the report on DSIMP.

Foreword (to be written by the Chairman of the concerned DDC)

Acknowledgement (to be written by the Chief of the concerned DoLIDAR)

Approval of the District Council on DSIMP

Map of Nepal (highlight the concerned district)

Map of District (political)

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1. Background

The Government of Nepal has enacted the Local Infrastructure Development Policy (LIDP) 2061 in order to accelerate the pace of rural development and to reduce rural poverty by improving access to goods, service and facilities for the betterment of the life of the rural people. The policy states that the Ministry of Federal Affairs and Local Development (MoFALD) is responsible for small irrigation systems at the local level (i.e. irrigation systems with command area up to 25 hectares in the hills and with command area up to 200 hectares in Terai). For expediting the process of decentralization the MoFALD is also responsible to coordinate and facilitate a number of other local infrastructure sectors⁵. The Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR) is the only technical department within the MoFALD and therefore is responsible for the overall management of local infrastructure development on behalf of the Ministry.

DoLIDAR was established for the management of local infrastructures by providing technical backstopping to the local level institutions, especially to the District Development Committees (DDCs). The small irrigation sector is now fully devolved into the local bodies who are implementing many small irrigation systems since last four years. According to the local self-governance act (LSGA), local development plans should be formulated according to need-based and participatory approaches. The act has also defined the steps for formulating plans and but objective tools for prioritising the projects are lacking. It has also been experienced that there is a lack of proper planning of the infrastructure at the local level and there is always tendency of ad-hoc planning without prioritization. This has not only brought confusion among the recipient communities, but also created managerial and administrative dilemmas among various stakeholders at local levels. The need for proper planning with prioritization for small irrigation systems in the districts has been realised now. In order to have proper planning for the development of small irrigation sector under local bodies, DoLIDAR has taken initiatives to prepare District Irrigation Master Plans in collaboration with local bodies, which could be a guiding plan for the planned development and management of small irrigation sector in the districts. So far DSIMP preparation has been already initiated and prepared for Lamjung and Khotang Districts. On the basis of learning from Lamjung and Khotang, DoLIDAR has plan to prepare Four DSIMP in collaboration with Local Infrastructure for Livelihood Improvement/LILI/HELVETAS Swiss Intercooperation and SDC, for Ramechhap, Udaypur, Jajarkot and Dailekh districts.

2. Purpose and Objectives

The overall objective of the consulting services is to prepare the District Small Irrigation Master Plan (DSIMP) of four districts. The firm has also to prepare the irrigation profile as a whole of the districts assigned and compile all the data and information to identify and prioritise the interventions for developing the feasible small irrigation systems and for

⁵ Water supply, river control, micro hydro, trail bridge, roads/trails etc.

developing/extending irrigation facilities in the districts. The "Approach Manual for the District Small Irrigation Master Plan" prepared by DoLIDAR shall also be referred to for preliminary guidance to prepare this plan.

The specific objectives, but not necessarily are limited to, are the following:

- Collect the information on existing and potential irrigation systems of all the VDCs and catchment areas within the district
- Identify and prioritise the small irrigation systems based on potentialities and available water resources with participatory meetings in Ilaka and the District level.
- Prepare Indicative District Irrigation Potential Map (IDPM).
- Prepare the District Irrigation Inventory Map (DIM) of all irrigation services.
- Prepare the Perspective Plan of small irrigation services and facilities; and
- Prepare District Small Irrigation Master Plan (DSIMP).

3. Scope of Services

The consulting package is to provide the high quality professional services for the preparation of DSIMP. The scope of services to be carried out by the Consultant shall broadly include, but not be limited to, the following:

a) Review of Secondary Sources of Information

The consultant in coordination with DDC and the District Technical Office (DTO) shall collect secondary information from the various district based line agencies, project/programmes, INGOs/NGOs and other regional and central level organizations including Department of irrigation (DoI) and National Federation of Irrigation Water Users Nepal (NFIWUAN).

b) Data Collection and Analysis

Primary data on the existing and potential irrigation services, both the spatial and non-spatial, shall be collected from VDC and at catchments level within the district in prescribed format. Proper orientation training shall be provided to the surveyors/enumerators for accuracy and efficiency in data collection. GPS shall be used when collecting data from the field.

The collected information shall be stored on computers. Primary analysis shall be done to find the total agricultural and irrigable land and coverage by the existing irrigation services.

c) Preparation of District Irrigation Inventory Map (DIIMP) for irrigation services

The consultant shall prepare the District Irrigation Inventory Map (DIIMP) of the district showing all the existing water resources and their existing/potential uses (eg water supply, irrigation, micro hydro etc). The detail inventory of existing irrigation services and facilities including the traditional irrigation systems shall be plotted on 1:25'000 topo-base maps. The consultant shall carry out the inventory survey with GPS of all existing irrigation services and shall also identify the required interventions; new construction, rehabilitation, periodic maintenance, regular maintenance etc. The DIM shall also be verified and finalized by discussing it in workshops at Ilaka - and DDC - levels in consultation also with the VDCs.

d) Preparation of Indicative District Small Irrigation Potential Map (IDSIPM)

The consultant shall prepare an Indicative District Potential Map (IDSIPM) according to the draft Approach Manual for the Development of Small Irrigation Systems of DoLIDAR. The base map shall be prepared on topographical maps 1:25'000, GIS Maps shall also be prepared in the final output. The consultant shall have validated the IDSIPM from the DDC, DTO, DoLIDAR and DoI.

e) Organization of Validation and Area Workshops

The consultant shall organize validation workshops at Ilaka/clusters level and present the irrigation services situation of the agricultural/irrigable command areas within the Ilakas, prioritise the schemes through participatory approach and finally shall be compiled at the district level. The participants of the workshops shall be stakeholders; VDC/Ward representatives and secretaries, representatives of line agencies, DDC personnel, representatives of political parties, Women, Dalit and disadvantaged people, farmers/cooperative groups, NFIWUAN/WUAs, I/NGOs, CBOs etc. working in the areas.

f) Preparation of Perspective Plan of small irrigation services and facilities

The consultant shall prepare the perspective plan of all feasible irrigation services and facilities which have been identified from the coverage in the IDPM and prioritised at the Ilaka level workshops. The interventions of services and facilities for the development/extension or maintenance of irrigation services shall be presented at a workshop in the DDC and final perspective plan of the small irrigation systems shall be developed. The perspective plan shall be shown in GIS maps too.

g) Preparation of District Small Irrigation Master Plan (DSIMP)

Considering the perspective plan of the irrigation services and facilities, the District Small Irrigation Master Plan shall be prepared. The consultant shall assess the required financial resources for implementation the DSIMP, prioritise the schemes from perspective plan and prepare the DSIMP based on the interventions proposed in the perspective plan. The DSIMP needs to be presented at district level for final inputs from all stakeholders.

The consultant shall incorporate the comments and suggestions of final workshops and comments from DDC, DTO and DoLIDAR during the preparation of final report and shall submit it, for procedural approval, to DDC and also to DoLIDAR. Finally DSIMP should be approved by the district council.

Consultant shall work under the supervision of a task force comprising representatives from Small Irrigation Section/DoLIDAR, concerned DDC, SDC and LILI. The consultant in coordination with DDC and DTO shall nominate a focal person for contact and for coordinating/communicating between the consultant and the stakeholders at district and local level and should have contact point/office at district head quarter (possibly at DDC/DTO) for whole assignment period of this job.

4. Study Team Composition

i) Study Team Composition and man month:

The team shall consist of the following professionals and supporting staff for the proposed task of DSIMP preparation.

Professionals:

Regional planner (1)	: 1.5 person months
Civil or irrigation Engineer (1)	: 3 person months
Sociologist (1)	: 0.50 person months
Agronomist (1)	: 0.50 person months
Environmentalist (1)	: 0.50 person months
GIS Experts (1)	: 1.50 person months
Overseer/Surveyor (4)	: 8.4 person months
Field Enumerators (8)	: 9.80 person months
Contact/focal person at district	: 3 person months

Note: The above human resource required is calculated for a hill district with an average ~ 50 numbers of VDCs. This could be calculated according to the requirement on the basis of number of VDCs and accessibility of the district.

ii) Qualification and Experience:

Team Leader/Regional Planner, wide experience expertise in planning of infrastructure services;

- ❖ More than 5 years' experience in planning such as preparation of sectoral Master plans, DTMPs, District Periodic Plan etc. with background of civil engineering.
- ❖ Preparation of DTMPs according to DoLIDAR's Approach Manual is an advantage.
- ❖ Must have completed Master's Degree in any one of the following subjects: Regional Planning, Economics, Sociology, Agriculture, Geography, Statistics, Population Studies, Rural Development, and Engineering.

Engineer

- ❖ More than 3 years of experience in irrigation engineering, preparation of irrigation master plans will be an advantage.
- ❖ Must have bachelor's degree in Civil Engineering.

Sociologist-economist

- ❖ More than 3 years' experience in socio-economic surveys. Preparation of sectoral master plans of infrastructure, District Periodic Plan, District Transport Master Plan and District Annual Plan will be an advantage.
- ❖ Must have completed Masters' Degree in social science or Rural Development.

Agronomist

- ❖ More than 3 years' experience in agricultural surveys. Preparation of sectoral master plans of infrastructure, District Periodic Plan, District Transport Master Plan and District Annual Plan will be an advantage.
- ❖ Must have completed Masters' Degree in Agricultural Science

Environmentalist

More than 3 years' experience in environmental related surveys. Preparation of sectoral master plans of infrastructure, District Periodic Plan, District Transport Master Plan and District Annual Plan will be an advantage.

- ❖ Must have completed Masters' Degree in Environmental Science

GIS Expert

- ❖ More than 3 years' experience in GIS mapping and analysis. Preparation of maps of spectral master plans; District Transport Master Plans, etc. will be an advantage.
- ❖ Must be graduate in Engineering or Geography

Supporting Staff/Focal Person: Qualification and experience of supporting staff can be fixed by the consultant with the concurrence of DoLIDAR

5. Duration of the Study and Reporting

The duration for the assigned task including final report is 7 months. The consultant should submit the following reports:

- Inception Report:** The consultant shall submit 2 copies of inception reports within 30 days after signing the contract indicating the detailed available secondary information, work plan and activities with fine-tuning of methodology and formats/questionnaires for the task. The formats and questionnaires shall be reviewed and approved by DoLIDAR before commencing the field works.
- Field Report :** Two copies of field reports should be submitted after the completion of field work (data collection and verification workshops). The estimated time for field report is within 4 month from signing date of the contract. The report should indicate how the fieldwork has been conducted, problems and solution, criteria used for scoring of prioritisation, norms and practices incorporated.
- Draft Report:** The consultant shall submit 3 copies of the draft report within 5 months from signing date of the contract. The report should have two volumes. Volume I should contain the main report and Volume II should contain data and GIS based maps.
- Final Report:** The consultant shall submit 7 copies of final reports within one month of submission of draft report (within 6 months from signing date of the contract) incorporating comments and suggestions on the draft reports and also from district workshops. The report should be in two Volumes as mentioned for draft report. The final report should be in hard as well as in soft copies and 1 set of the hard copy of maps should be in topographic fin map sheets and the rest 5 sets to be in district maps (1:125000). Final maps have to be prepared in GIS also overlaying the desired information.

The reporting schedule shall be summarized as per the table below:

S.N.	Reports	Period	Remarks
1	Inception Report	Within a month of signing the contract	2 copies

2	Field Report	Within 4 month of signing the contract	2 copies
3	Draft Report	Within 5 month of signing the contract	3 copies
4	Final Report	Within 6 month after signing the contract	7 copies & 1 soft copy in CD

6. Proposal Submission

The consultants shall submit technical and financial proposals under two-envelope system as per the provision of the prevailing procurement rules of GoN in a separate wax sealed envelope clearly mentioning the type of proposal (Technical and Financial) and name of the task on the envelope.

7. Payment Schedule

The payment schedule will be as per the following:

After submission of inception report = 15% of the total contract amount.

After submission of the field report = 30 % of the total contract amount.

After submission of the draft report = 35 % of the total contract amount.

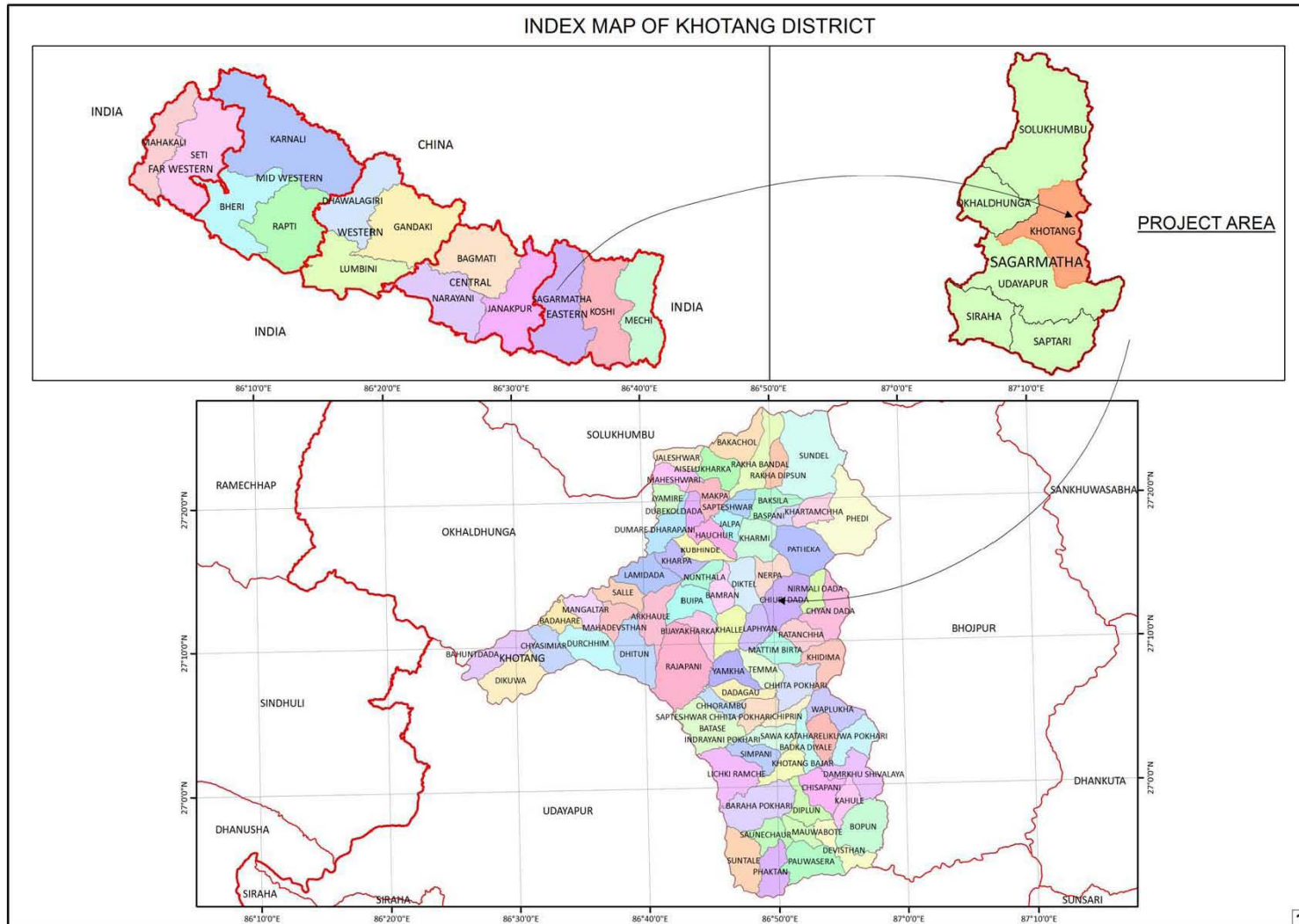
After submission and approval of the final report = 20% of the total contract amount.

8. Budget Allocation

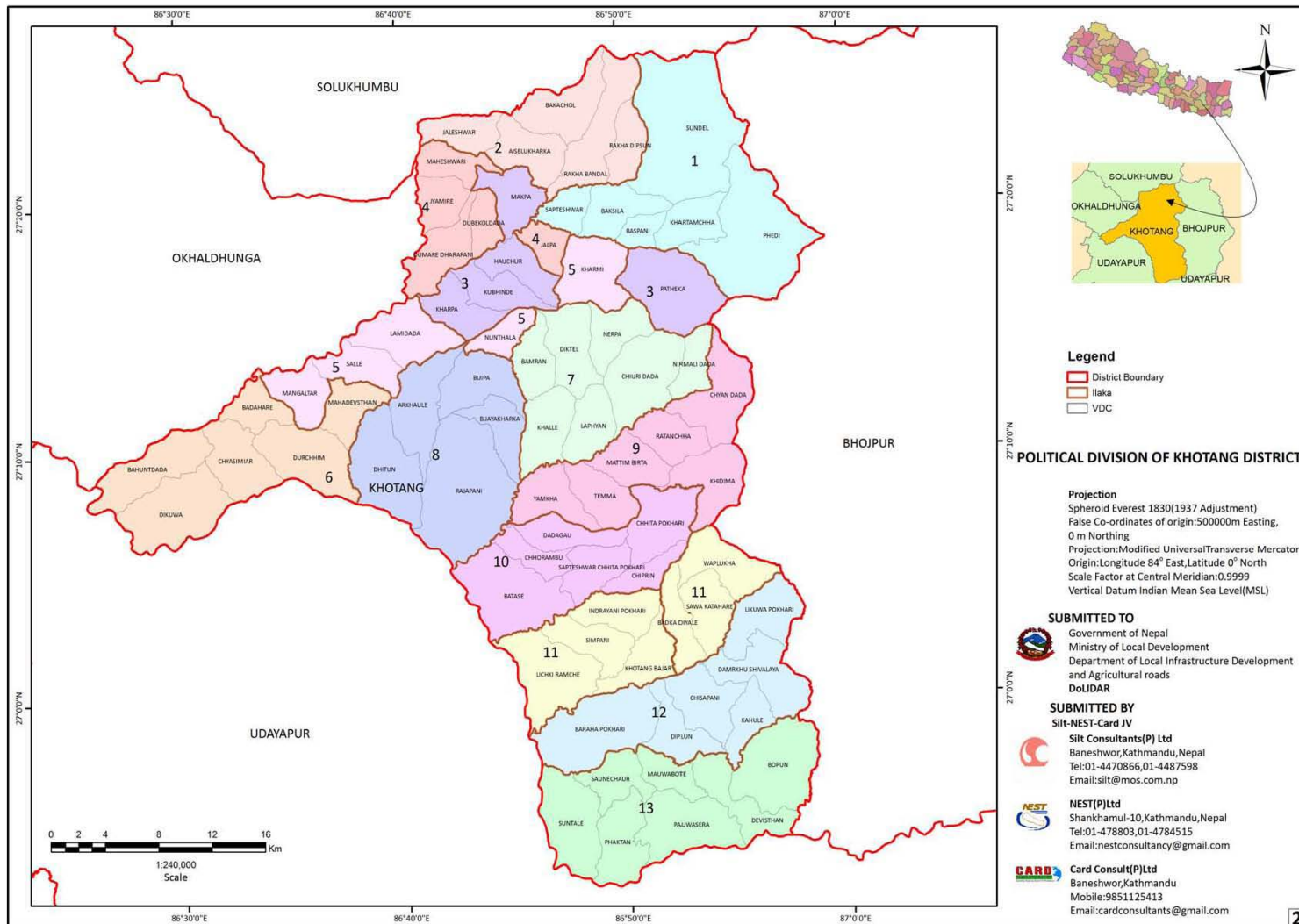
Total budget allocated for the assignment is NRs. including VAT.

ANNEX 6: SAMPLE OF MAPS TO BE PREPARED

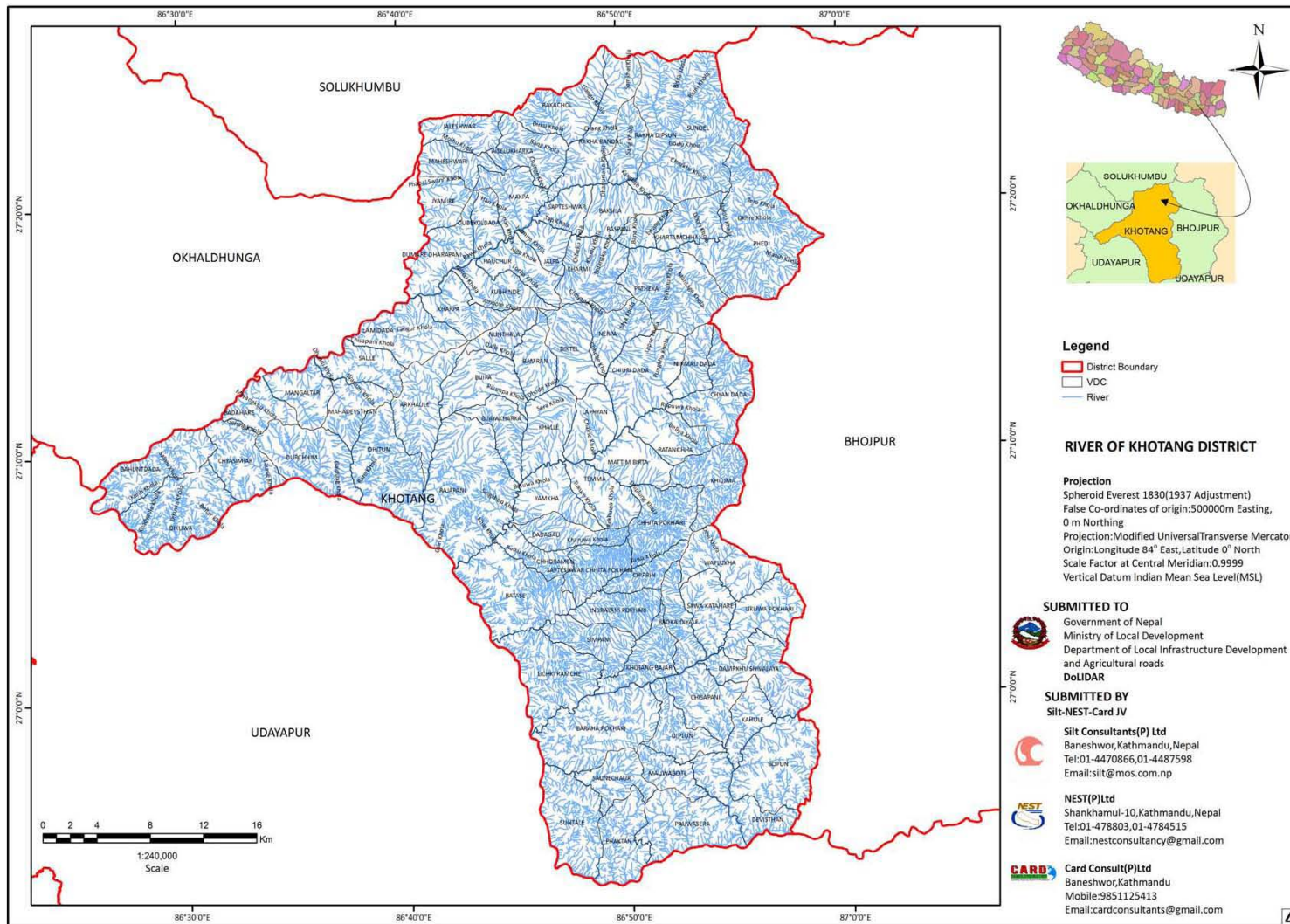
Location Map



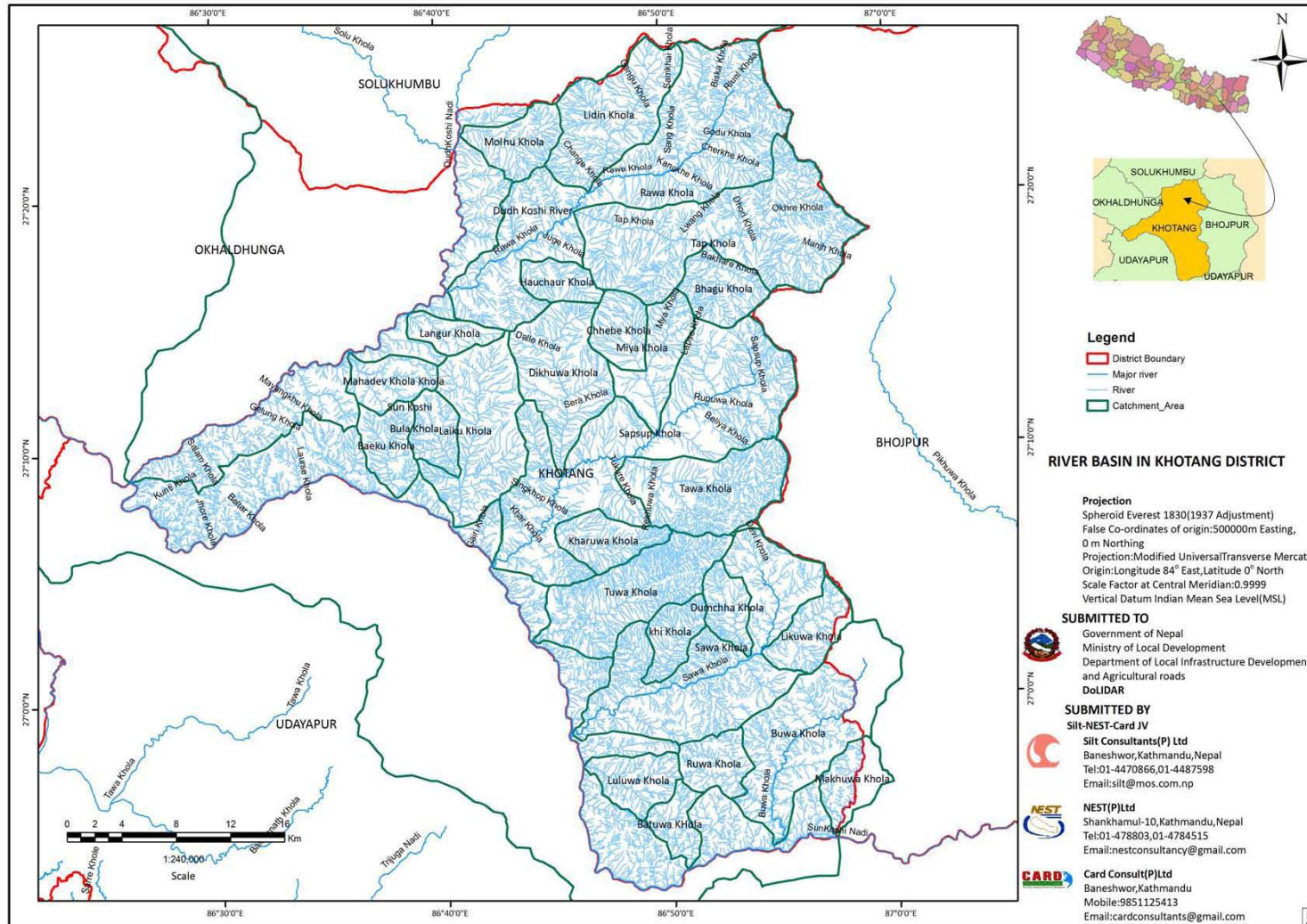
Political Division Map



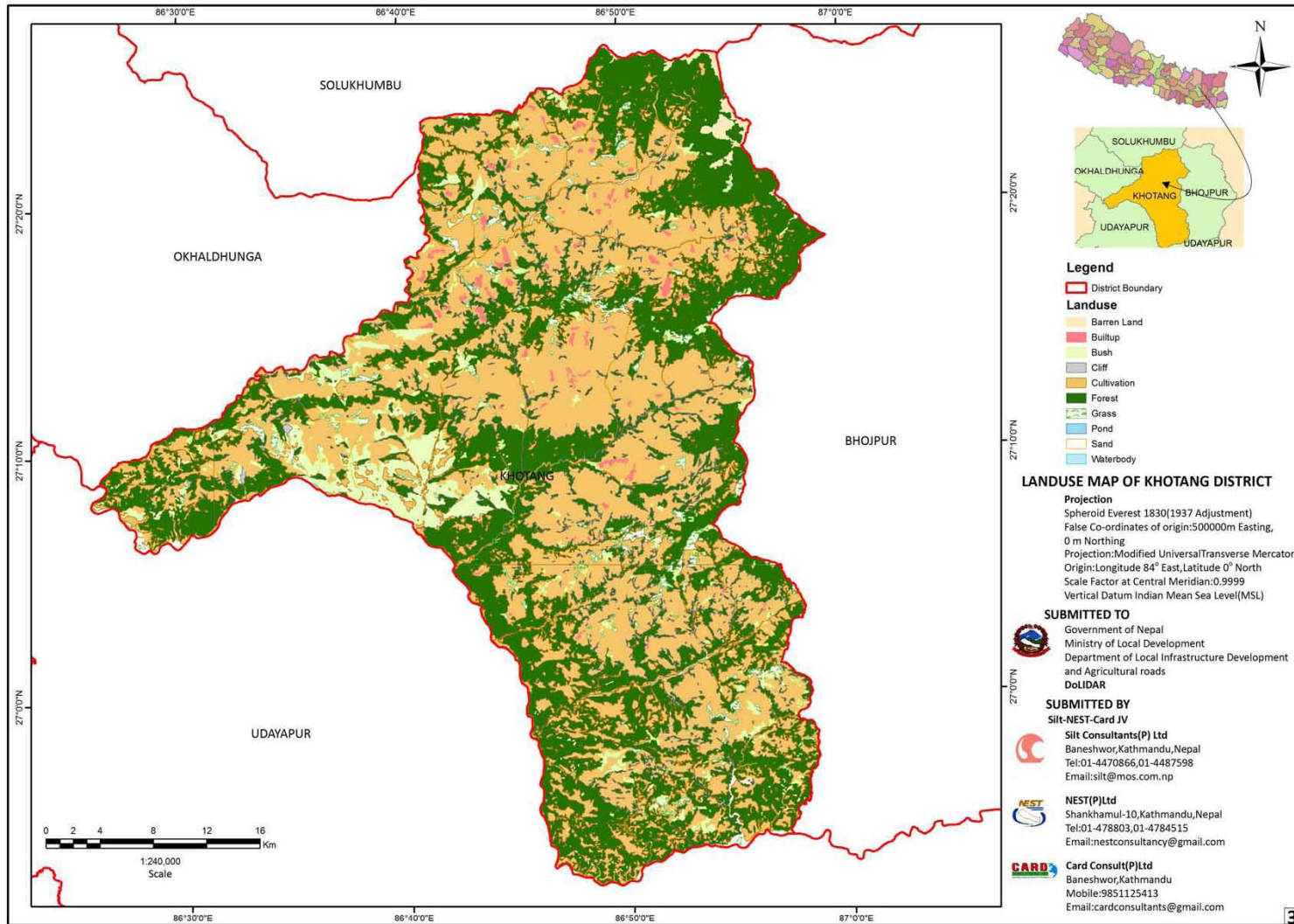
Rivers Map



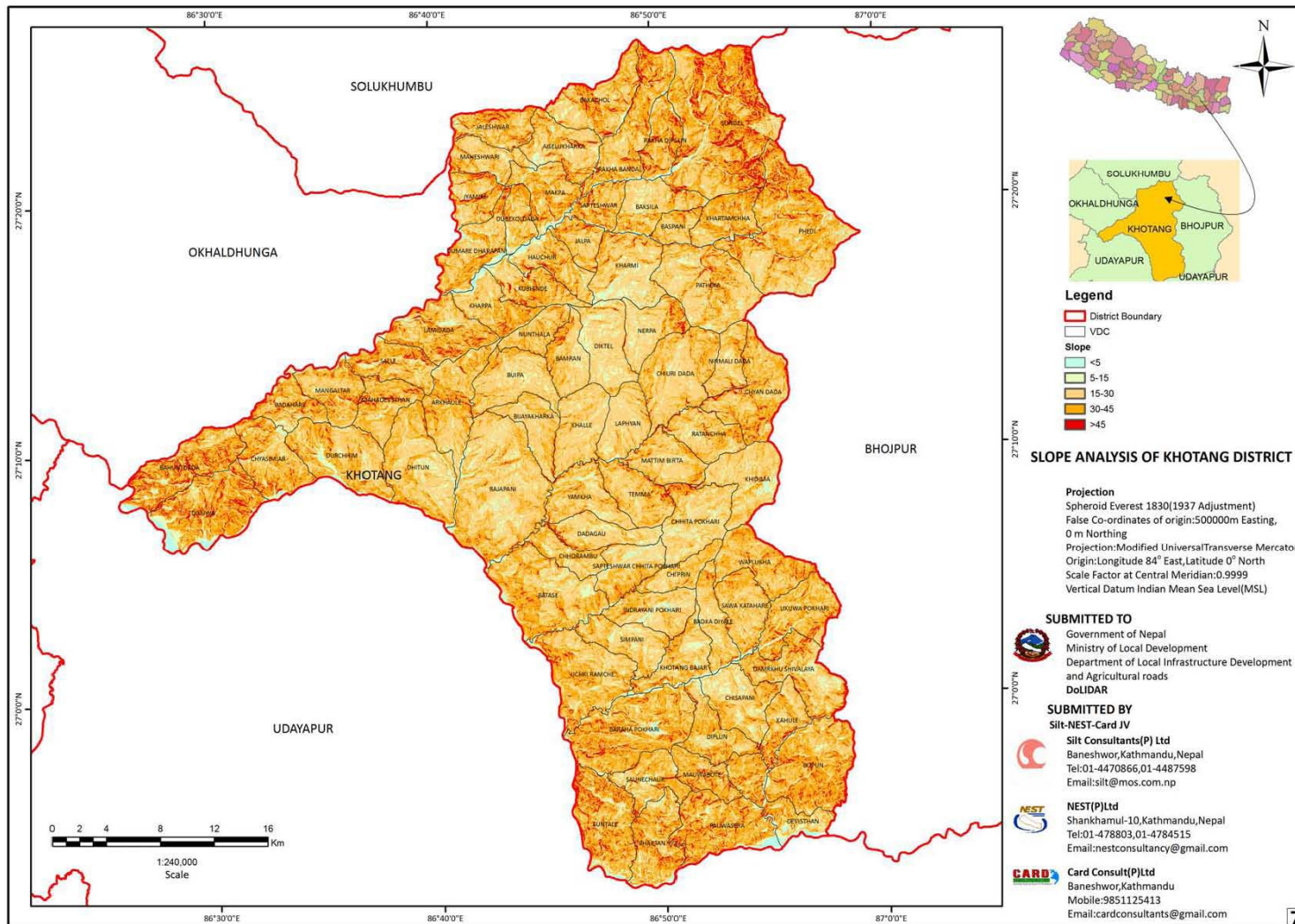
River Basins Map



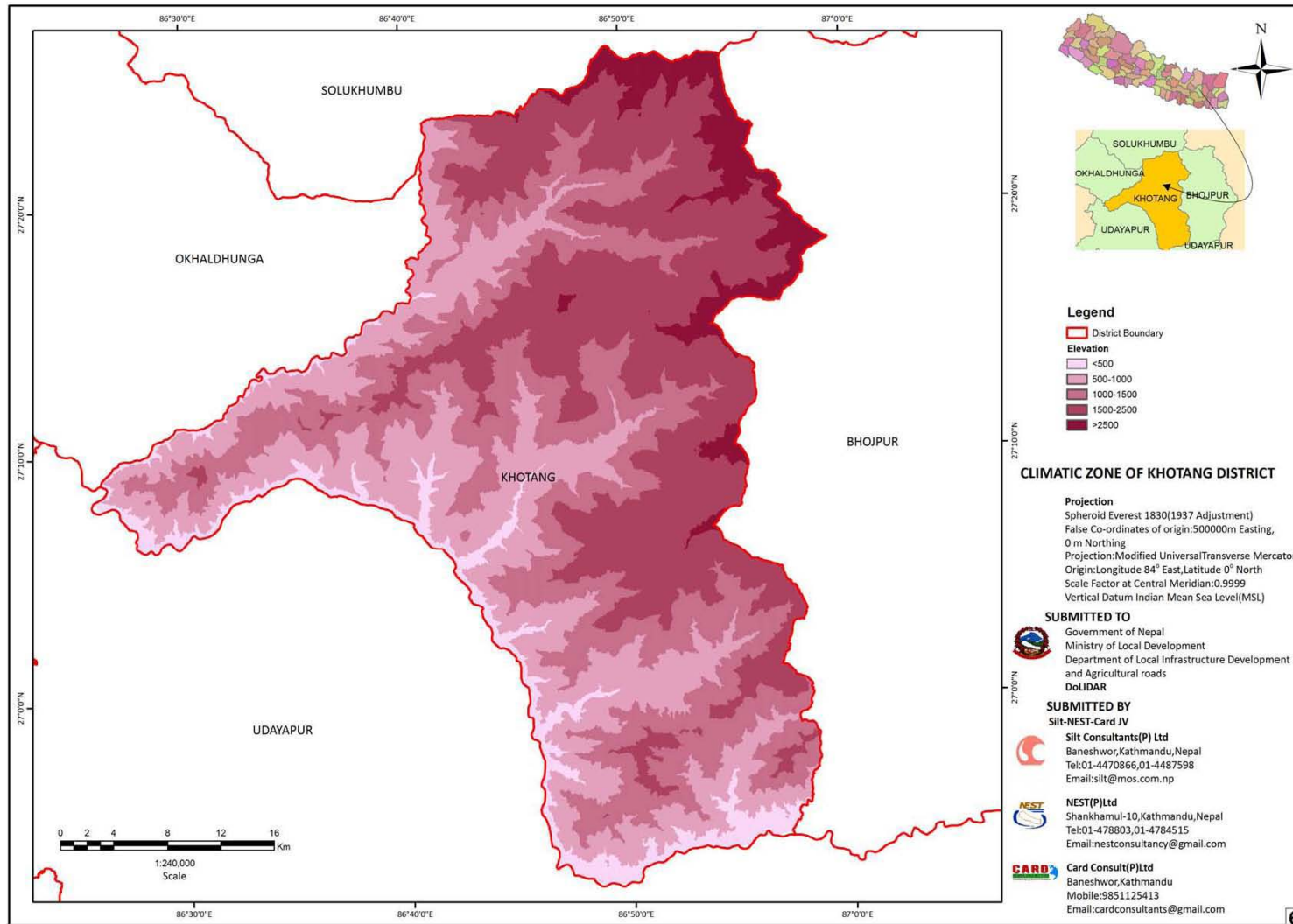
Land Use Map



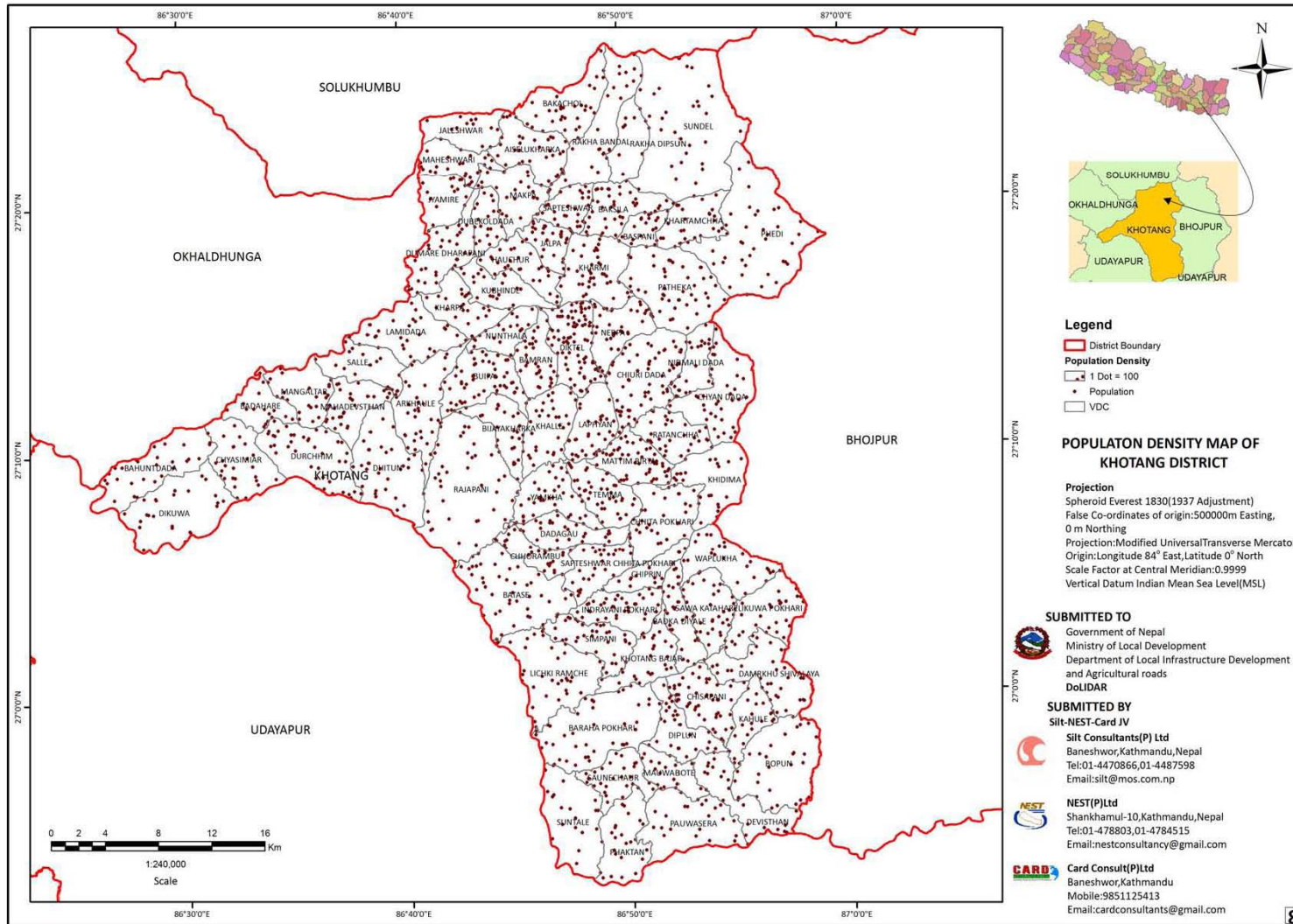
Slope Analysis Map



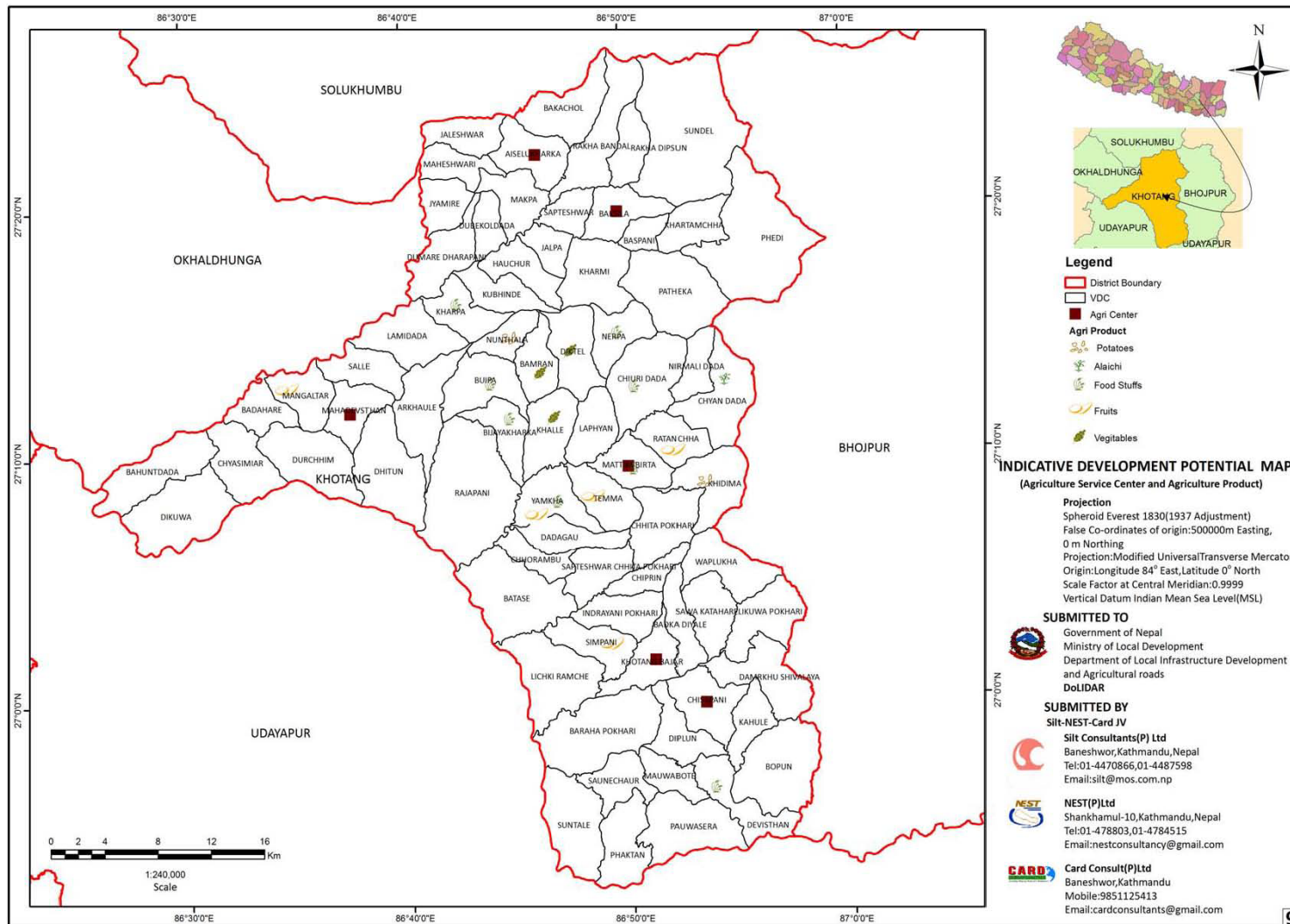
Climatic Zone Map



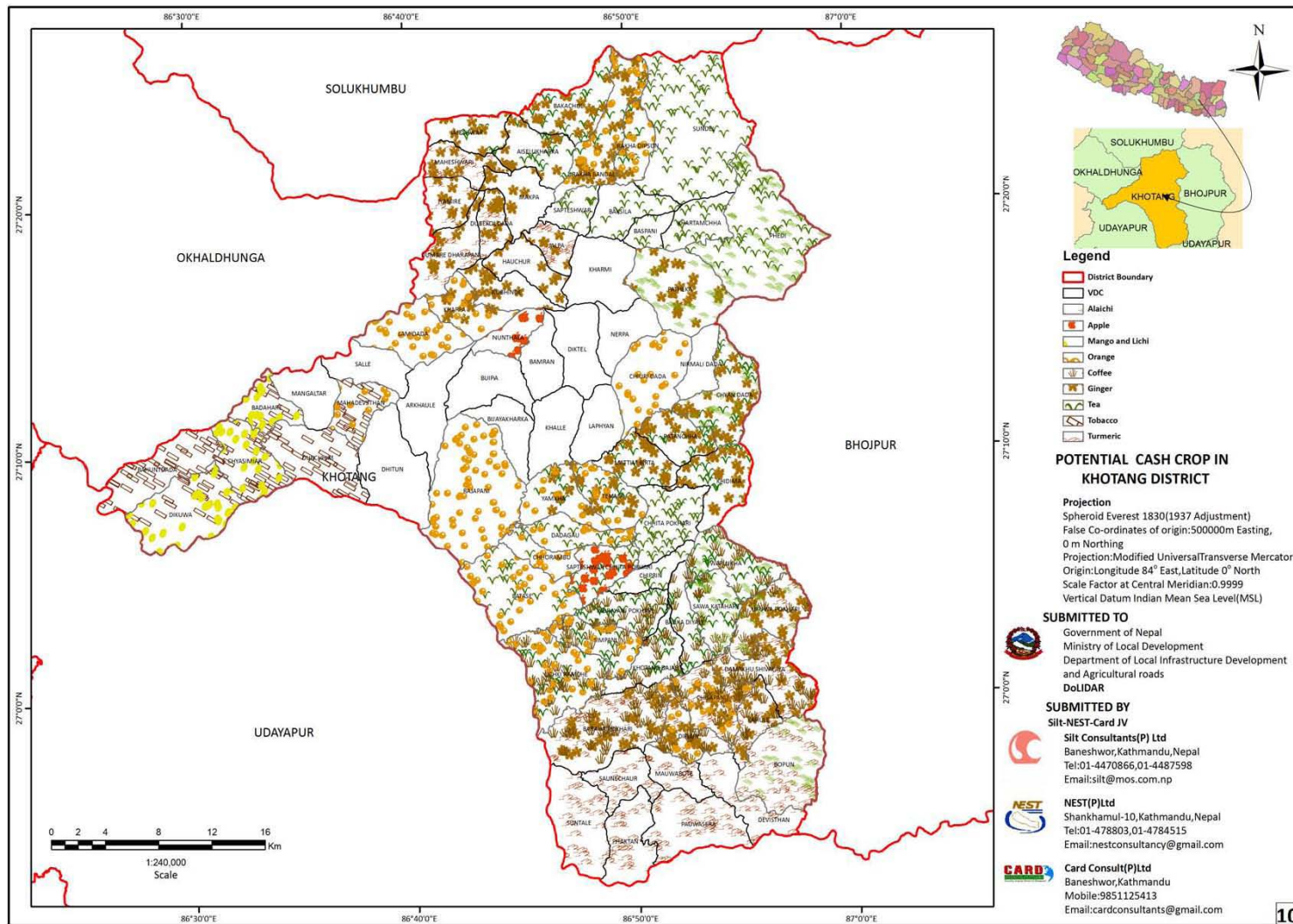
Population Density Map



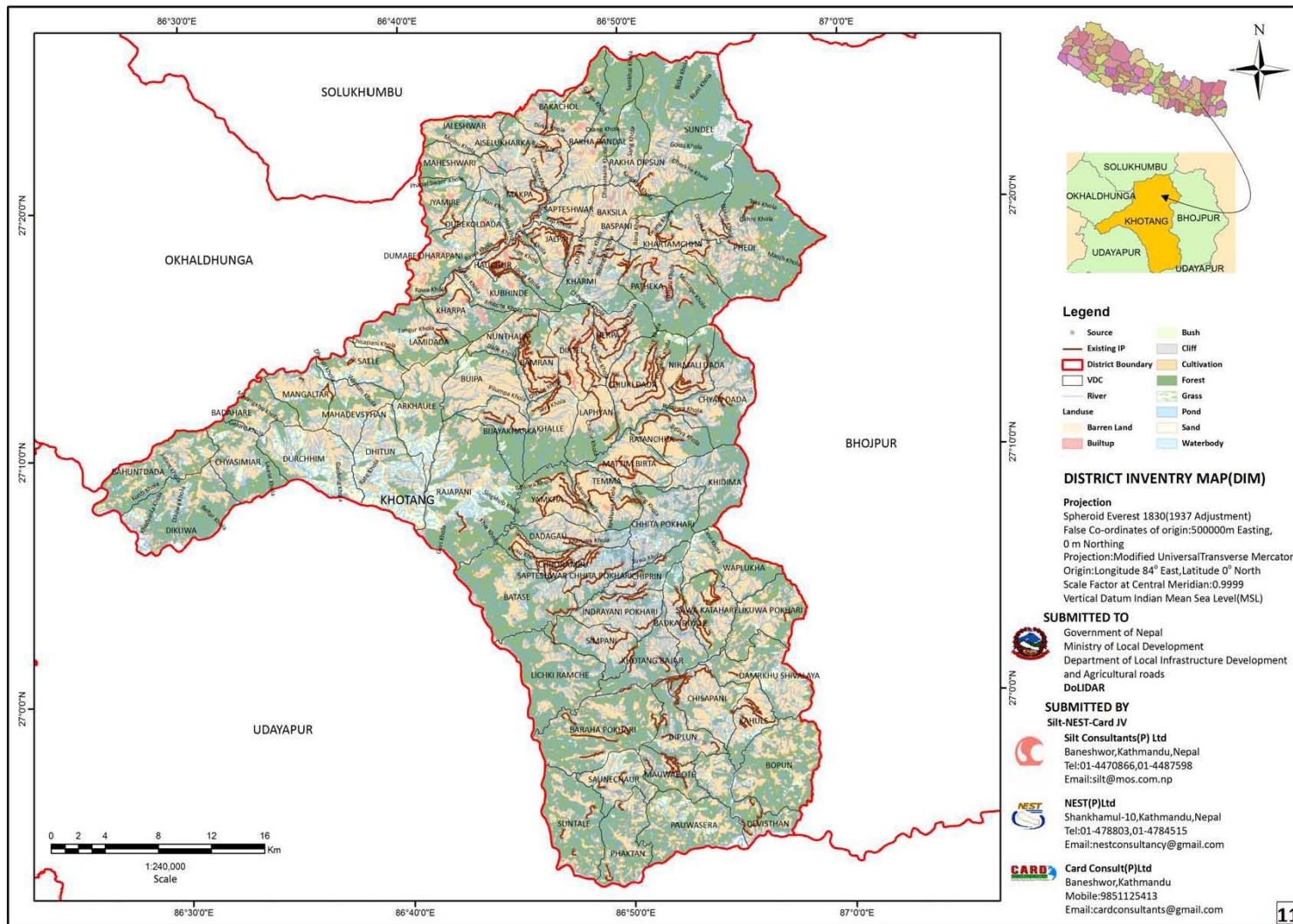
Indicative Irrigation Development Potential Map



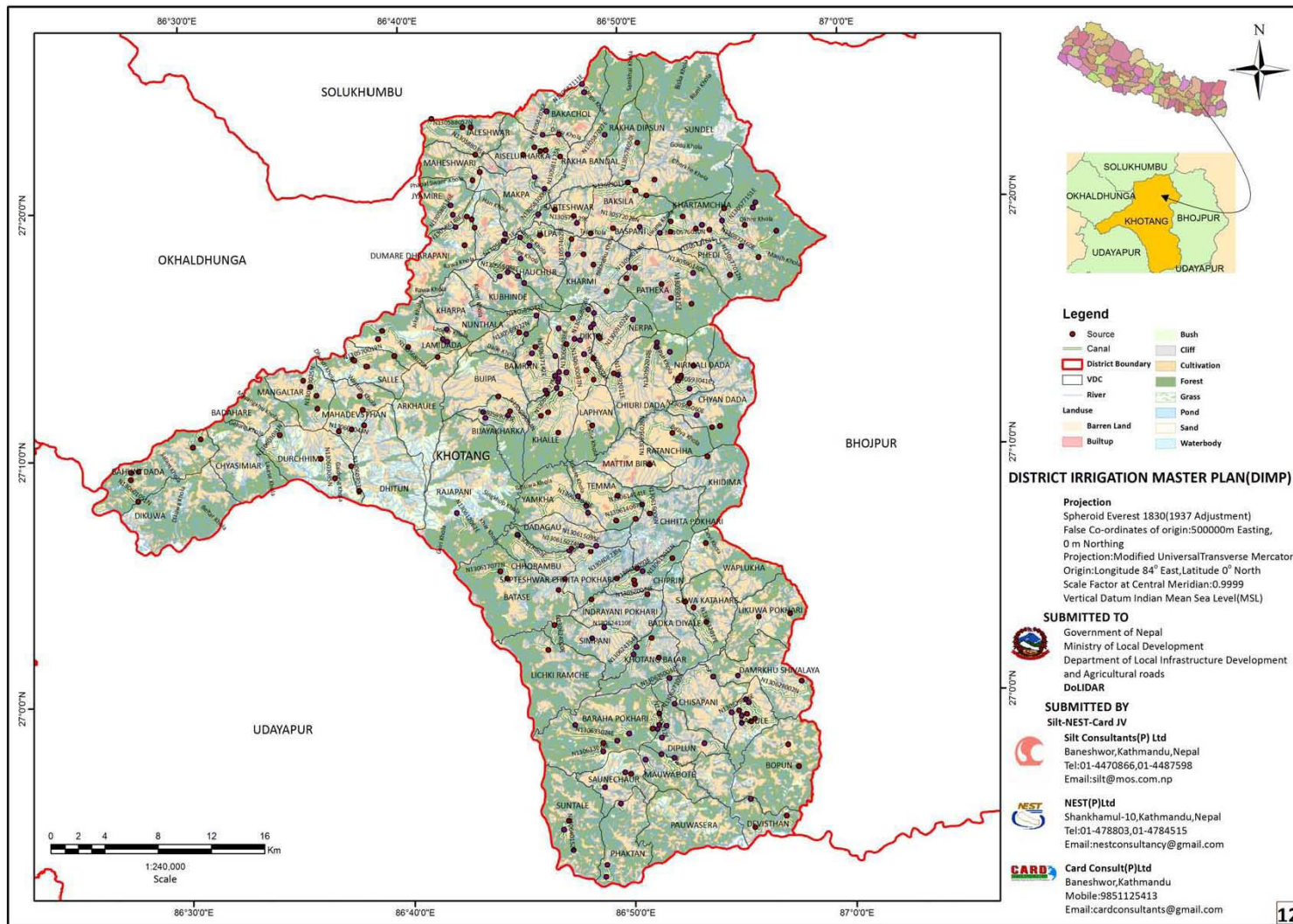
Potential Cash Crops Map

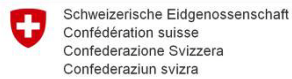


District Inventory Map



District Small Irrigation Master Plan Map





Swiss Agency for Development
and Cooperation SDC



This Approach Manual is prepared by the DoLIDAR with the support from Local Infrastructure for Livelihood Improvement Project (LILI) implemented by HELVETAS Swiss Intercooperation Nepal on behalf of Swiss Agency for Development and Cooperation.
