

# ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

## INNOVATIVE AND CLIMATE RESILIENT IRRIGATED AGRICULTURE PROJECT (ICRIAP)

**2018**

## IRRIGATION AND WATER RESOURCES MANAGEMENT PROJECT (IWRMP)

**Ministry of Energy, Water Resources and Irrigation**

**Department of Irrigation**

**Jawlakhel, Lalitpur**

Irrigation and Water Resources Management Project (IWRMP)  
**Preparation of Environmental and Social Management Framework**

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## Abbreviation

ICRIAP	<i>Innovative and Climate Resilient Irrigated Agriculture Project</i>
WUA	<i>Water Users Association</i>
O&M	<i>Operation and Maintenance</i>
ESMF	<i>Environment and Social Management Framework</i>
ESMP	<i>Environment and Social Management Plan</i>
TOR	<i>Terms of Reference</i>
OPD	<i>Office of the Project Director</i>
IWRMP	<i>Irrigation and Water Resources Management Project</i>
GON	<i>Government of Nepal</i>
AMIS	<i>Agency Managed Irrigation Schemes</i>
FMIS	<i>Farmer Managed Irrigation Schemes</i>
IDD	<i>Irrigation Development Division</i>
IDSD	<i>Irrigation Development Sub-division</i>
ISP	<i>Irrigation Sub-Project</i>
FGD	<i>Focus Group Discussion</i>
NGO	<i>Non- Governmental Organization</i>
CBO	<i>Community Based Organization</i>
PAP	<i>Project Affected People</i>
GAP	<i>Gender Action Plan</i>
VCAP	<i>Vulnerable Community Action Plan</i>
ESMP	<i>Environmental and Social Management Plan</i>
IPDP	<i>Indigenous People Development Plan</i>
WUG	<i>Water Users Group</i>
IPM	<i>Integrated Pest Management</i>
INM	<i>Integrated Nutrient Management</i>
WB	<i>World Bank</i>

## CHAPTER I

## I. DESCRIPTION OF THE PROJECT COMPONENTS INCLUDING TYPE OF ACTIVITIES ELIGIBLE FOR FINANCING

### 1.1 Background/Retrospection

Nepal remains tagged as an agricultural country despite the fact that the contribution of agriculture sector to the national GDP has been continuously dwindling in the recent past. Over the last 10 years the contribution of agriculture sector to GDP<sup>1</sup> has declined from 36.64% in 2005/06 to 31.6% in 2015/16. Meanwhile on an average the agriculture growth rate in the last decade stood around a meager 2.9 % per annum. Notwithstanding above, agriculture continues to offer employment to 66% of the population and accounts for 50% of export earnings. The significance of this sector essentially heightens the role of irrigation in up-scaling Nepalese agriculture.

The agriculture landscape of the country has notably changed in recent years. A switch over to remittance economy for food security and thereby poverty reduction has encouraged the youth to desert the rural community and agriculture has virtually turned into feminized activities. Given the scenario, agriculture must prove itself a lucrative or profitable enterprise in order to retain the younger people in the sector.

Nepalese agriculture is marred by low productivity. *Growth in agriculture has been low and volatile and largely driven by favorable monsoon rather than any growth in productivity. Cereal yields are low compared to its neighboring countries.* The country's Fourteenth Plan<sup>2</sup> also acknowledges this reality and iterates that agriculture growth rate which stood at 2.2% during Thirteenth Plan period (2070/71 - 2072/73) was not as per the expectations. This is largely attributed to erratic monsoon. Hence the current Fourteenth Plan intends *to increase agriculture production and productivity* and thereby achieve self sufficiency in agricultural produce. For this the *productivity and competitiveness of agriculture sector* will be enhanced. The Plan sets out *speedy poverty reduction through high economic growth rate and thereby achieve economic and social transformation* as its major objective. For this emphasis is laid on employment generation, infrastructure development and agriculture as the engines for development. Therefore a vibrant and thriving agricultural sector that is capable of driving economic growth is envisaged instrumental in the country's poverty reduction endeavors.

Given the contention of increasing agricultural production and productivity, role of irrigation becomes of paramount importance. Irrigation is vital to increase agricultural output and yield as *irrigation stabilizes crop production, improves crop quality, allows for crop diversification including introduction of new crop that are not viable under dry land farming and, of particular importance, helps to reduce rural poverty*<sup>3</sup>. Accordingly the 14<sup>th</sup> plan (2016/17 - 2018/19) envisages an expansion of year-round irrigation services in cultivable land and a goal of supporting agricultural yield and production with reliable and sustainable irrigation services. The strategy focuses on the concept of cooperative WUAs in AMISs, FMISs and medium irrigation schemes; and autonomous irrigation boards for large and major irrigation schemes, as a means for providing sustainable irrigation service through efficient irrigation facilities by mobilizing user organizations, government agencies, local bodies, and the private sector. The Plan has targeted to cover, by the end of plan period, 1.52 million hectares of land

<sup>1</sup> Contribution of Agriculture Sector to GDP (%)

2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
36.64	35.87	35.86	35.57	34.83	35.02	35.01	34.38	34	33.1	31.6

Economic Survey 2015/16

<sup>2</sup> 2073/74 - 2075/76

with irrigation facilities compared to the present coverage of 1.392 million hectares. Equally, the Plan underscores that irrigation systems are severely affected by climatic factors and the management of risks arising out of depleting water source has been a challenge. On the whole the impact of climate change include<sup>4</sup> (a) reduced runoff in rivers, due to changing rainfall patterns, (b) increased flood flows due to more intense rainfall, (c) increased demand for water due to higher temperatures and more erratic rainfall, and (d) changes in crop suitability. There is, therefore, a need to make irrigation systems more resilient to climate uncertainty.

Department of Irrigation (DOI), the executing arm of GON for irrigation development has been well conversant with the diverse issues stated above and been striving hard lately for the design and development of climate resilient sustainable irrigation systems. The present Innovative and Climate Resilient Irrigated Agriculture Project (ICRIAP) proposed for World Bank financing is one such compelling effort.

## 1.2 The Project

The proposed Innovative and Climate Resilient Irrigated Agriculture Project (ICRIAP) is GON's taking on a systemic approach to cope with irrigated agriculture concerns. It is increasingly realized that irrigation and agriculture in isolation may not deliver the wished-for increase in agriculture production. Climate change, a third factor, has come to play a momentous role in the entire process of production systems. Changes and variation in climate have become a contentious issue for irrigation sector as irrigation systems are severely affected by climatic factors. Reduced runoff in rivers due to variation in rainfall patterns, swollen rivers with high floods due to intense rainfall, amplified demand for water due to rise in temperature and erratic rainfall etc are some of the visible impacts of climate change on irrigation. Therefore, *"the existing arrangements for irrigation design and management may need to be reconsidered"* to make irrigation systems more resilient to climate uncertainty. The present project's goal hence is to attend to this challenge and enhance the adaptive capacity of irrigation systems to cope with ever increasing climatic variation in order to develop climate - resilient irrigation sector.

The Innovative and Climate Resilient Irrigated Agriculture Project aims to increase and sustain irrigated agriculture productivity through improved irrigation system performance, with a full complement of agriculture inputs based on the Value Chain Approach, and a transformed WUA form of effective cooperative or irrigation board for integrated crop water management. Consequently ICRIAP will consist of following components that are expected to be implemented in an integrated approach:

- (i) *Watershed protection and landscape management* to ensure the continuity of the water source for the irrigation system.
- (ii) *Rehabilitation and modernization of irrigation systems* to improve the reliability and responsiveness of irrigation supplies
- (iii) *Transformation of WUAs into multifunctional WUA cooperatives* capable of managing an integrated approach to the needs of farms
- (iv) *Development of profitable agriculture in the command area* ensuring increased returns for the target group that will translate into the proper operation and maintenance (O&M) and thereby sustainability of the irrigation system

The first part is intended to control degradation as well as promote regeneration of the concerned watershed areas to ensure the continuity of the water source for the irrigation system. This may be in the form of controlling grazing, vegetation plantation awareness programs etc. to name a few. The

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<sup>3</sup> World Bank (2006): Quoted in CA Madramootoo (ed): Water management for Global Food Security, McGill University Canada; 2011

<sup>4</sup> Framework for Effectiveness and Resilience of Small and Medium Scale Irrigation Systems in Nepal: Prachanda Pradhan, Umesh Nath Parajuli, Ram Chandra Khanal: Kathmandu, Nepal 2017

second part is the rehabilitation/ modernization of the irrigation system itself in order to improve the reliability and responsiveness of irrigation supplies and facilitate the adoption of more innovative irrigation practices at field level. This in turn would feed into the third and possibly most important part, to optimize the efficient use of irrigation water to generate the maximum agricultural profits for the intended target group. This includes determining the most suitable crops taking into account the climate, local soils, water availability and marketing opportunities. Increased returns for the target group should translate into the proper O&M and thereby sustainability of the irrigation system. And to manage all of above the irrigators' organization or the WUA shall be strengthened and transformed into multifunctional WUA cooperatives capable of managing farmers' needs.

### 1.3 Project Component

The proposed project comprises of the following components and subcomponents:

#### 1.3.1 Component A: Catchment Management and Landscape Protection (18 million US\$)

The performance of irrigation systems that divert river flows to a canal network is directly related to the catchment areas from which irrigation water supplies originate. Watersheds that have been degraded due to over- grazing and deforestation cause erosion. As a result the rivers carry high bed loads that accelerate canal siltation and significantly affect the maintenance costs and, ultimately, the useful life of irrigation infrastructure. The degradation of watersheds also alters the runoff hydrology with rainfall events having shorter duration and higher peak flows, and this can change the water supply characteristics of the irrigation system. Accordingly, the project proposes improved catchment management activities to be promoted through increased community awareness program with the participation of appropriate stakeholders within Government of Nepal. This component will basically include the following sub- components.

- Conservation education to the concerned stakeholders/residents
- Vegetation and grazing management
- Source protection and landscape stabilization

#### 1.3.2 Component B: Sustainable Irrigation Development and Management (132 million US\$)

Improvements in irrigation systems by upgrading infrastructure and instituting better system management can increase agriculture productivity and production. These improvements combined, make the use of water more efficient and thus counter the impact of reduced water supplies. By lessening previously wasted water the irrigators can use less water to cover a given command area. Both the sub-components; *Improved Irrigation Infrastructure* and *Irrigation System Management*, under Component B are expected to enhance irrigation systems sustainability.

##### **A) Sub-component B-1: Development, Rehabilitation and Modernization of FMIS, Groundwater, and other Nonconventional Irrigation Schemes (77 million US\$)**

The output of this component will be better irrigation service delivery by institutionally and financially capable WUA cooperatives for existing schemes in the Province number 4, 5, 6 and 7. These will be Farmers Managed Irrigation Schemes (FMIS) located in mountains, hills and terai. The target is to rehabilitate and modernize irrigation systems covering 25,000 ha and will involve:

- (i) Physical rehabilitation and modernization of FMISs in the regions stated above. The works will include permanent head works, main canal improvement for higher efficiency and water control, provision of water control structures in branch canals and possible use of branch pipelines to distribution tanks or hydrants to which farmers can attach hoses for more efficient field application and even for non-conventional systems, such as drip irrigation;

- (ii) Conjunctive use in systems will be investigated where groundwater (particularly deep tube wells) can supplement diminished surface water supplies during low flow periods of the year. The improvement and modernization of Bairahawa Lumbini Ground Water Irrigation Project (BLGWIP) will also be a major task in this component and for groundwater systems the pre-paid smart card system will be explored, as used by the Barindh Multipurpose Development Authority (BMDA) in Bangladesh;
- (iii) Applying other non-conventional technologies to irrigate farmland where conventional approaches are not feasible or appropriate. One example of this is pumping water onto tars which are by and large farmed by the poorest and most marginalized farmers; and
- (iv) Transformation of the present WUAs into more effective multifunctional WUA cooperatives which are capable of an integrated approach to the needs of farms, covering watershed management, irrigation, marketing, input procurement and mobilizing local services (agrovets, agricultural extension, etc).

#### **B) Sub-component B-2: Sustainable Irrigation Management for Improved water delivery of AMIS (55 million US\$)**

The output of this component will be improved performance of irrigation systems in terms of physical, irrigation service and user organization management; completing and consolidating irrigation management transfer (full responsibility and management transfer of schemes up to 10,000 ha and joint management for larger systems, as per the Agriculture Development Strategy) to Water Users Associations which will be transformed into WUA co-operatives or WUA irrigation boards where applicable. Some of these processes have already been initiated under IWRMP. Approximately seven projects with command area of about 40,000 hectares from Terai and Hills, under the list of 32 DOI-AMIS projects, would be selected using effective selection criteria. For all schemes, whether already transferred or to be transferred, this component will involve:

- (i) A program of rehabilitation of canal networks down to tertiary and field canals (down to the lowest unit) and associated irrigation structures;
- (ii) Preparation and implementation of canal operation plans for measured water delivery and scheduled irrigation service along with an asset management plans (pre- and post-intervention) which will set priorities for rehabilitation and a plan for future maintenance;
- (iii) Transformation of present WUAs into multifunctional WUA cooperatives or irrigation boards, and;
- (iv) Improving the technical capacity of DOI regional/field offices and users organizations to provide assistance during emergencies to schemes that have been transferred to farmers.

#### **1.3.3 Component C: Climate Resilient Agriculture and Value Chain Development (US\$ 35 million)**

Building on the pilot initiative of the On-Farm Water Management program of IWRMP, and guided by the Agricultural Development Strategy (2015), this component will focus on enhancing the efficiency of irrigation water use and crop management with integrated approach for increased and sustained agricultural yield. It would seek to enhance productivity through the application of climate smart agricultural technology and farm mechanization by promoting improved water management and agronomic practices resulting in profitable and commercialized agriculture. Institutional support for agricultural development would be provided through establishment of service center at each WUA

cooperatives, provision of agriculture extension program, and value chain promotion of agricultural outputs having better linkages with input and output markets. The key activities planned for implementation under this component would be as follows:

- (i) Climate smart approach to agriculture to reduce the vulnerability of production systems in the command area and make cropping patterns and management practices more climate resilient. It includes introducing farmers to drought and flood-resilient technologies, conservation agriculture techniques and greenery promotion with modern agricultural cultivation techniques;
- (ii) Institutional capacity building of WUA cooperatives and CBOs. The capacity of the local Government will be developed for post-project support and sustainability of agriculture development interventions;
- (iii) Pilot effort of land leveling, shaping and consolidation for improved water use efficiency and improvement of on-farm water management;
- (iv) Introduction of small and medium scale farm mechanization as per the requirement of command area;
- (v) Provision of infrastructure support for cooperatives and private sector for storage houses, cold storage facilities, seed production and processing facilities, resource center establishment, nursery establishment, output processing facilities, market center establishment and transportation;
- (vi) Improved extension services in the command area. Current extension services will be upgraded with better infrastructure, equipment, research and technical capacity.

Activities under this sub-component are likely to benefit and support the recently launched GON 14th Plan Agricultural sector goals and objectives. The sub-components under this component are:

- Improved technology for production and productivity enhancement
- Post-harvest, market and value chain (VC) development support
- Farm mechanization and on-farm water management
- Institutional capacity development and ICT

#### **1.3.4 Component D: Project Management and Capacity Development (US\$ 15 Million)**

The overall project will be managed by this component. As a central level project, the project will be guided by a central level project steering committee chaired by the Secretary of Ministry of Irrigation. Office of Project Director (OPD) will be a central level coordinating office for the Donor, Ministry of Irrigation, Ministry of Agriculture, Ministry of Finance and implementing central and state government agencies. After a full devolution to state governments is realized, a Project Coordination Office (PCO) will be set up in each state which will have the role of monitoring and supervision of the sub-projects and further coordination between OPD in central and state government. The sub-projects in the field level will be implemented as per the state government project implementation modalities or institutions when these are in operation.

- **Sub-Com 1:** Institutional Strengthening
- **Sub-Com 2:** Technical Assistance Support
- **Sub-Com 3:** Monitoring and Evaluation
- **Sub-Com 4:** Logistics, Administration and Management

#### 1.4 Project Development Objective

The objectives of the proposed Innovative and Climate Resilient Irrigated Agriculture Project are;

- To increase and sustain irrigated agriculture productivity through improved irrigation system performance.
- To fully complement the agriculture inputs to the beneficiaries based on the Value Chain approach
- To transform WUA(s) as an effective cooperative organization or irrigation board for integrated crop water management capable of meeting the challenges posed by climate change on irrigation and agriculture.

#### 1.5 Objectives of the Environmental and Social Management Framework Document

The Environmental and Social Management Framework (ESMF) document defines the steps, processes, and procedures for screening, assessment, alternative analysis, monitoring and management of the environmentally related issues. In addition, the ESMF analyzes environmental and legal policies of Nepal and safeguard policies of the WB; presents the institutional capacity assessment related to the environmental management; and describes the principles, objectives and approach to be followed while designing site-specific environmental mitigation measures.

The ESMF is intended to be used as a practical tool during project/program formulation, design, implementation, and monitoring in ICRIAP. The features of the ICRIAP which make an ESMF the appropriate requirement under the Bank's OP/BP 4.01 are listed below.

- A number of sub-projects and components;
- Various developmental stages to be carried out in modules;
- Sub-projects spread over a wide geographic area;
- Implementation phases and duration spread over years; and
- Design of the sub-projects and exact locations for implementation, as well as impacts are not yet determined at this stage.

The ESMF spells out the environmental and social safeguards, institutional arrangements and capacity required to use the framework. This ensures that sub-projects under the ICRIAP meet the national and local E&S requirements, and are also consistent with OP 4.01 and OP 4.12 (of the Bank). The ESMF sets out principles and processes within which the sub-projects are implemented agreeable to all parties. The other objectives of the ESMF include:

- Assessment of potential adverse Environmental and Social impacts commonly associated with the sub-projects and the way to avoid, minimize or mitigate them;
- Establishment of clear procedures and methodologies for the E&S planning, review, approval and implementation of sub-projects;
- Development of an EA screening/initial assessment system to be used for sub-projects; and
- Specification of roles and responsibilities and the necessary reporting procedures for managing and monitoring sub-project E&S concerns.

## **1.6 Implementation Approach and Methodology**

According to WB procedures, activities already identified for financing under the ICRIAP fall under Environmental Category B due to their potential impacts. World Bank Operational Policy OP 4.01 Environmental Assessment requires partial EIA and development of site specific EMPs for projects belonging to Category B.

Proposed activities relate only to rehabilitation and/or repair of already existing irrigation infrastructure, which will not change their existing footprint. Rehabilitation works of the proposed irrigation projects will have only minor and localized impacts on the environment. Most of the impacts are of temporary character and they will disappear after the works are completed.

## CHAPTER II

### II. REGULATORY AND LEGAL PROVISIONS

Overall, the Government policies, Acts and regulatory provisions of varied disposition govern the implementation of development projects. Consequently a range of policies, acts and regulations is pooled together in order to address / attend to the requirements of projects awaiting implementation. This dearth of comprehensive and inclusive national policy and regulations pertaining to social safeguard measures is more pronounced in development projects. Hence more often than not social safeguard issues in Nepal are attended to following project specific guidelines prepared in accordance with donors' safeguard policies. This phenomenon is equally true for irrigated agriculture sector wherein a multitude of policies, acts, regulations play a key role in streamlining social safeguard measures. Following are some of the major policies and legal provisions that provide for social safeguards and oversee the compliance.

#### 2.1 Policy and Plans

##### The Constitution of Nepal (2015)

Provisions for environmental protection and social justice have been embedded in the new constitution of the Federal Republic of Nepal. Carved as fundamental rights of the citizen, Article 25 guarantees *right to property* and requires due compensation to owners of property if acquired by the executing agency in the public interest. Likewise Article 30 ensures every citizen the *right to live in a clean and healthy environment* and provides for compensation for any injury caused from environmental pollution or degradation. In addition every farmer shall have the right to have access to lands for agro activities, select and protect local seeds and agro species which have been used and pursued traditionally. Further provisions have been made under article 51, *Policies of the State*, regarding agriculture and land reforms which abolishes dual ownership existing in land, discourages inactive land ownership, promotes land management; commercialization, diversification and modernization of agriculture, by pursuing land use policies to ensure proper use of land and ecological balance. Policies regarding protection, promotion and use of natural resources is carved to conserve, promote and make sustainable use of forests, wildlife, vegetation and bio-diversity by mitigating possible risks to environment and to pursue the principles of environmentally sustainable development.

##### Fourteenth Plan (2073/74-2075/76)

Chapter 6 of the periodic Fourteenth Plan (2014/15-2016/17) includes the provision for gender equality, inclusion and mainstreaming. Under section Gender Equality and Empowerment (6.1.1), the plan aims to ensure the fundamental rights of women by social, economic and political empowerment. Likewise while section 6.1.2 on *Inclusion* iterates its objective to ensure access of women, dalit, janjatis, Madheshi, Muslim to resources, services and facilities; section 6.1.3 provides for capacity development and increase access to resources and means of marginalized and endangered ethnic groups/janjatis.

##### Irrigation Policy (2070)

Irrigation Policy duly offers the primary stakeholders, the farmers, a major say in the development and implementation of an irrigation project. It mandates that the water users through their organized institutions, be involved in the process of irrigation planning and development. Water Users' Associations (WUA) are required to register at appropriate level and designated as legal entity. Moreover such WUAs must have representation from women, vulnerable groups like Dalits and backward nationalities/Janajatis (indigenous people).

Irrigation Policy 2070 adheres to Gender Equity and Inclusive Development and promotes social programs that contribute to women empowerment and end discrimination against women in irrigation sector. Further, it offers an allocation of a minimum 33 percent representation in users' associations to women, Occupational Caste, downtrodden and excluded. Similarly, the policy has provisions for *poverty reduction and women development* and improved access of women to irrigation sources. Likewise, the policy lays emphasis on improving women's skill and efficiency through training and skills development programs.

The policy likewise asserts balanced and judicious use of groundwater; and advocates social justice during project development.

### **Climate Change Policy (2011)**

The Climate Change Policy, 2011 is based on Nepal's ratification of the United Nations Framework Convention on Climate Change (UNFCCC) negotiated at the UN Conference on Environment and Development (UNCED), popularly known as the Earth Summit, held at Rio de Janeiro, Brazil in June 1992 [16]. Nepal also acceded to the Kyoto Protocol (KP) which is an international agreement linked to the UNFCCC, on 19 September 2005. In pursuance of these conventions and Protocols Nepal adopted a National Adaptation Program of Action (NAPA), 2010 and Local Adaptation Program of Action (LAPA), 2011 for climate change adaptation.

The main goal of the Climate Change Policy, 2011 is to improve livelihoods by mitigating and adapting to the adverse impacts of climate change, adopting a low carbon emissions socio-economic development path, and complying with the spirit of the country's national and international agreements related to climate change.

### **National Agriculture Policy, 2004**

The National Agriculture policy has vision of improving living standard through sustainable agricultural development achieved by commercial and competitive farming system. The main objectives of the policy are: Increase production and productivity; increase competitiveness in regional and world markets developing foundations of commercial and competitive agriculture; and protect, promote and utilize existing natural resources, environment and bio diversity. The policy emphasized to develop an appropriate policy and strategy for encouraging cooperative and private sectors for commercial production, processing and marketing of the agricultural products.

### **Agriculture Development Strategy 2015**

The Agriculture Development Strategy (ADS) 2015 has vision of a self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth and contributes to improved livelihoods and food and nutrition security. In order to achieve its vision the ADS will accelerate agricultural sector growth through four strategic components related to governance, productivity, profitable commercialization, and competitiveness while promoting inclusiveness (both social and geographic), sustainability (both natural resources and economic), development of private sector and cooperative sector, and connectivity to market infrastructure (eg agricultural roads, collection centers, packing houses, market centers), information infrastructure and ICT, and power infrastructure (eg rural electrification, renewable and alternative energy sources). The acceleration of inclusive, sustainable, multi-sector, and connectivity-based growth is expected to result in increased food and nutrition security, poverty reduction, agricultural trade competitiveness, higher and more equitable income of rural households, and strengthened farmers' rights.

### **Rangeland Policy 2012**

The Policy defines rangeland as natural pasture land, grassland and shrub-land. It aims to increase productivity by improving forage/grass productivity, to protect livestock farmers' traditional rights for

pasturing livestock in community rangeland and forest, and to determine stocking density to minimize competition between grazing domestic and wild animals.

The Policy seeks to secure the facilities traditionally enjoyed by livestock farmers using range-lands located within community forests. The Policy identifies provisions to collect and conserve the green forage (grass) during the rainy season and winter and dry seasons in order to ensure continuous supply of cattle feed round the year. The Policy seeks to determine livestock density on the basis of capacity of the rangelands for minimizing the grazing competition and pressure of both domesticated and wild animals, and imposes charges or penalties on cattle for using rangeland with the goal of limiting unproductive cattle on the rangeland.

### **National Land Use Policy, 2012**

Policy aims to encourage optimal use of land for agriculture by classifying the country's land territory into seven land use categories—agricultural, forest, residential, commercial, public, industrial, and others. Land in the agriculture category is for agricultural cultivation, livestock farming, and tree plantation. The Policy also aims to increase agricultural productivity by systematizing land fragmentation and by adopting a land pooling system. The goal is to encourage commercial, cooperative and contractual farming.

### **Agriculture Bio-Diversity Policy, 2007**

The Agriculture Bio-diversity Policy resulted from Nepal's accession in 1993 to the International Convention on Biological Diversity (CBD)—informally known as Convention on Biodiversity—adopted at the Earth Summit in Rio de Janeiro, Brazil in 1992. This policy is in accordance with the objectives of NAP-2004 to protect, promote and utilize bio-diversity and to promote ecological balance. It intends to lead to benefit from protection and utilization of genetic resources for food security, livelihood security and poverty reduction.

### **Nepal Biodiversity Strategy (2002); and Nepal Biodiversity Strategy Implementation Plan (1992)**

Nepal biodiversity strategy, adopted by GON in August 2002, specifies the implementation of impact assessments process in accordance with the provisions of EPA 1997 and EPR 1997 to assess the impacts of development activities on biodiversity. The strategy has given emphasis in ensuring effective implementation of existing rules and regulations regarding environmental impact assessments.

The National Biodiversity Strategy plan describes the protection and wise use of the biologically diverse resources of the country, the protection of ecological processes and systems, and the equitable sharing of all ensuing benefits on a sustainable basis for the benefit of the people and to honor obligations under the Convention on Biological Diversity. Biological diversity in Nepal is closely linked to the livelihoods and economic development of people, and relates to agricultural productivity and sustainability, human health and nutrition, indigenous knowledge, gender equality, building materials, water resources, and the aesthetic and cultural well-being of society.

### **Agro-Business Promotion Policy (ABPP), 2006**

The ABPP, 2006 aims at diversification, service delivery and private sector involvement to Transform agriculture from subsistence to commercial farming. The policy aims to reduce poverty by encouraging production of market-oriented and competitive agro-products and promoting internal and external markets. The policy's specific measures include public-private partnership in services delivery and in infrastructure for storage, marketing and processing.

### **National Cooperative Policy, 2013**

National cooperative policy underlines the following policies related to agriculture and environment.

- Necessary technologies shall be promoted to make cooperative enterprise/ business clean and environment friendly
- The involvement of agriculture cooperatives in agricultural production, storage, processing, marketing and supply of agricultural inputs shall be promoted,
- Priority shall be given to the cooperatives for the management of public sector industries, agricultural farms and market centers.

### **National Fertilizer Policy 2002**

Objectives of the National Fertilizer Policy (NFP) 2002 are (1) provision of condition (policy and infrastructure management) for enhancing fertilizer consumption and (2) promotion of integrated plant nutrient management system (IPNS) for the efficient and balanced use of fertilizers and its salient features have been broad definition of fertilizer to include three types of fertilizer- organic, chemical and microbial, promotion of IPNMS to maintain soil fertility through minimizing soil degradation and likely negative impact of chemical fertilizer, equal treatment to government, private and cooperatives firms involved in fertilizer business.

## **2.2 Acts and Regulations**

Apart from the above Plans and Policies, scores of Acts and Regulations come to play while devising social safeguard measures. Some of the relevant acts and regulations needing review are as follow;

*The Environment Protection Act (EPA), 1997 and the Environment Protection Rules (EPR), 1997 (amendment, 2007)* are the principal regulatory frameworks to make the development programs and projects environment-friendly. The law entered into force since June 1997 contains several provisions to internalize environmental assessment system and to maintain a clean and healthy environment by minimizing the adverse impacts on human beings and other life forms and physical objects. EPR makes mandatory provision of preparation of IEE and EIA documents and integrate mitigation measures into project planning, designing and implementation and conduct environmental monitoring and evaluation by the stakeholders.

*The Forest Act, 1993* respects all forest values, including environmental services and biodiversity, as well as the production of timber and other commodities. The Forest Act and regulations do not explicitly deal with rangeland, but with the implementation of rules requiring licensing of grazing animals and pasturage and imposing pasture charges provide implicit control. The Act provides participation of stakeholders and capacity building of local institutions. The success of such efforts is not in increased timber production but improved bio-diversity, conservation of forest areas and reduction in poverty. The forest rule elaborates legal measures for the conservation of forests and wildlife. The EPR has made it mandatory that a development proposal requiring clear felling or rehabilitation of national forests with an area of not more than 5 hectares will attract an IEE whereas a development proposal requiring clear felling or rehabilitation of national forests with an area of more than 5 hectares will have to go for an EIA.

*National Park and Wildlife Preservation Act, 1973, GON* and its regulations *National Park and Wildlife Preservation Rule (NPWPR) 1973 (2030)* and *Buffer Zone Management Rule (BZMR) 1994* have stipulated provisions for the protection of wild flora and fauna in the area set for their conservation, utilization and management. Under an amendment to the Act in 1989, the "conservation area" is defined. Entry to such an area is restricted. The Act and Rule also define the prohibited activities within the area. It calls for the formulation and implementation of the management plan(s) by detailing activities for natural resources management, wildlife conservation and their sustainable utilization. The

Rule prohibits activities such as wildlife hunting and damage to flora and fauna, fishing etc. within the conservation area.

*Plant protection act 2007 and Plant protection rules 2010*, these legislations regulate the trade of plants and plant products. The major objective of the act is to protect national or regional fauna by preventing introduction, establishment, prevalence and spread of pests during trade of plant and plant products. The act has provision to designate any national level office as National Plant Protection Organization. Similarly, the act has also provision relating to entry permit, sanitary certification and re-export certificate of plant and plant products. Pest control provision has also been included in the act.

*The Land Acquisition Act (1977)* and its associated, *Related Act (1964)*, *Rules (1969)*; *Guidelines (1993)* are the key legal devices that set out the procedures of private land acquisition, property valuation and compensation. The Act empowers the Government to acquire any private land, on the payment of compensation, for public interest. Clause 27 of the Act iterates "notwithstanding anything contained elsewhere in this Act, the Government may acquire any land for any purpose through negotiations with the concerned land owner. It shall not be necessary to comply with the procedure laid down in this Act when acquiring land through negotiations". The Act however protects tenant's right on land with the Clause 20 that ensures entitlement for both the tenant and the landlord at the rate of 50 % of total compensation to each party.

*The Public Roads Act, (1974)* is yet another diktat that allows the State to acquire private land for erecting temporary facilities like storage, construction camps, etc., during construction or road improvements. The State however is required to compensate the private owner for the damages, loss incurred to buildings, standing crops, trees etc.

*Child Labor Prohibition and Regulation Act, 2001* Prohibits a child from engaging in work. States nobody will engage in work a child who has not completed fourteen years of age as a labor.

*Water Resource Act 1992* explicitly mentions that the water resources that existed in surface and sub-surface region should be rationally utilized, protected and managed by prioritizing the sustainable uses of water resources and stopping any detrimental impacts to environment from water resources to keep the resource risk free. It highlighted the priority of water uses as drinking and household uses as first and followed by irrigation, livestock keeping, hydropower, industrial uses, water transportation and others. Most of those uses are likely come in to effect in watershed management work.

*The Soil and Watershed Conservation Act 1982* describes a directive approach to watershed management in which land use system plans are implemented with the assistance of Watershed Conservation Officers (government staff). It was found that the Act could not be implemented through a rational, top-down planning approach within the Nepal political and social context and the Government adopted a mandatory requirement to involve local citizens in conservation activities. Department of Soil Conservation and Watershed Management, Ministry of Forests and Soil Conservation, has since required direct contributions from local communities to the jointly planned watershed management activities.

*The Local Self-Governance Act, 1999* encourages the District Development Committees to formulate and implement plans related to forests, biodiversity and soil conservation; and other activities to facilitate environmental conservation and Village Development Committees to include environmental aspects, inter alia, in agriculture, irrigation and soil conservation and river training, and physical development. It also encourages reforestation of fallow areas, hills, sloping and public land. Under this act VDC, Municipality and DDC are entrusted with the responsibility to protect and maintain religious, cultural and the historical heritages in their respective area of jurisdiction.

*Water Resource Strategy 2002* emphasizes the Nepal needs to promote ways of managing its water at the river basin level to achieve long-term sustainability for the benefits of its entire people. It also

suggested that the holistic, systematic approach that honors, respects and adheres to the principle of IWRM could address the current issues of water resource management in Nepal.

*Aquatic Animals Protection Act, 1961* has made it a punishable offence for introducing poisonous or explosive materials into a water source or destroying a water system with the intent of catching or killing aquatic life.

*Irrigation Regulation, 2000* provides procedures to establish legal personalities in the form of WUA to duly institutionalize water utilization and management by the local water users.

*Solid Waste Management and Resource Mobilization Act, 1987 & Solid Waste (Management and Resource Mobilization Rules), 1990* Prohibits the disposal of solid waste in either public or private places. The rules entrusts Solid Waste Management and Resource Mobilization Centre, established under the Act, to provide necessary service to individual or institution in managing solid waste. The water resource projects may obtain such service and maintain the water resource clean.

*Pesticide act (1991) and pesticide rules (1993)*, the act is effective since 16 July 1994. Pesticides are registered and regulated under the pesticide act and rules. Act regulates the imports, production, sale, distribution, marketing and use of pesticides for management and preventing pesticide risk. Under the pesticide act 1991, a Pesticides Board is functional comprising various Ministries, pesticide association, scientists and consumers groups. Major task of the board is implementation of national and international rules and regulations.

### **2.3 International Conventions**

Nepal is one of the parties to a number of international conventions of a general nature including the Rio Conference of 1992 related to water, environment and development. Some of the relevant conventions for the environmental assessments are: Convention on Biological Diversity (CBD), Convention on the International Trade in Endangered Species (CITES), Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) and World Heritage Convention, which are related to species conservation, international trade of species and their products, and conservation of wetlands; and natural and cultural heritage. The country as a whole is obliged to implement the Convention's provisions and a single Project may not be responsible for its compliance. Nepal is also the party to ILO Convention 169, popularly known as Indigenous and Tribal Peoples Convention, 1989. This Convention is to ensure the consultation and participation of indigenous and tribal people in framing any policy and development program if their livelihood is going to be affected. Internationally, this Convention is into force from September, 1991. However, Nepal signed this Convention on August 7, 2007 only and GON ratified this international commitment on September 14, 2007. Nepal is the second country from Asia to sign this Convention. The Article 3 of the Convention states that the indigenous and tribal peoples shall enjoy the full measure of human rights and fundamental freedoms without hindrance or discrimination. The provisions of the Convention shall be applied without discrimination to male and female members of these peoples. No form of force or coercion shall be used in violation of the human rights and fundamental freedom of the peoples concerned, including the rights contained in this Convention

## CHAPTER III

### III. APPLICABLE SAFEGUARDS

#### 1.1 World Bank Safeguards Operational Policies Triggered by the Project

All developmental projects poised for World Bank financial assistance or support must comply with the pre-ordained safeguard *operational policies* and procedures of the Bank. The World Bank safeguard policies override the Nepal policies should there be any discrepancy and the Bank's safeguards policies will be binding when implementing WB funded projects. Under the proposed Innovative and Climate Resilient Irrigated Agriculture Project (ICRIAP) the following World Bank safeguard policies are triggered;

- 1.1.1 *Environmental Assessment (OP 4.01)*: The World Bank mandates that all developmental projects awaiting Bank's assistance undergo environmental assessment in order to ensure that the project does not have negative environmental impacts. The objective of this policy (OP/BP 4.01) is to ensure that World Bank funded projects are environmentally sound and sustainable. The policy is triggered if a project is likely to have adverse environmental risks and impacts in the Project Area and/or area of influence. The policy widely covers likely impacts on the natural environment; human health & safety, and trans-boundary environment.
- 1.1.2 *Natural Habitats (OP 4.04)*: The policy seeks to ensure that World Bank supported infrastructure and other development projects take into account the conservation of biodiversity, as well as the numerous environmental services and products which natural habitats provide to human society. The policy strictly limits the circumstances under which the bank supported project can damage natural habitats (land and water areas where most of the native plant and animal species are still present). The policy prohibits bank support for projects that would lead to the significant loss or degradation of any Critical Natural Habitats, whose definition includes those natural habitats which are either: legally protected, officially proposed for protection, or unprotected but are of known high conservation value.
- 1.1.3 *Pest Management (OP 4.09)*: The policy is triggered when use of harmful pesticides is made during the project activities. A preferred solution is to use Integrated Pest Management (IPM) techniques and encourage their use in the sectors concerned. If pesticides have to be used in crop protection or in the fight against vector-borne disease, the Bank-funded project should include a Pest Management Plan (PMP), prepared by the borrower, either as a stand-alone document or as part of an Environmental Assessment.
- 1.1.4 *Indigenous Peoples Policy (OP 4.10)*: This policy triggers when presence of indigenous people is eminent/reported in the project area. The policy aims to make sure that: (a) indigenous people affected by WB funded projects have a say in project design and implementation; (b) adverse impacts on indigenous people are avoided, minimized or mitigated; and (c) benefits intended for indigenous peoples are culturally appropriate. The policy provision is triggered whether potential impacts are positive or negative. This necessitates the preparation of Indigenous Peoples Development Plan to mitigate the potential adverse impacts or maximize the positive benefits.
- 1.1.5 *Physical cultural resources (OP 4.11)*: Cultural resources are important as sources of valuable historical and scientific information, as assets for economic and social development, and as integral parts of people's cultural identity and practices. The loss of such resources is irreversible, but fortunately, it is often avoidable. The policy mainly triggers on to avoid, or

mitigate, adverse impacts on cultural resources from development projects that the World Bank finances.

- 1.1.6 *Involuntary Resettlement (OP 4.12)*: The WB admits that involuntary resettlement may cause severe long-term hardship and impoverishment. Therefore wherever feasible involuntary resettlement should be avoided, or minimized, exploring all viable alternative project design. But where resettlement can't be avoided the Bank policy prescribes that resettlement activities be designed and implemented as a sustainable development program. Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them. The policy is triggered if involuntary acquisition of land results in; (a) relocation or loss of shelter; (b) lost of assets or access to assets; or (c) loss of income sources or means of livelihood; or (d) the involuntary restriction of access to legally designated parks and protected areas.
- 1.1.7 *Forests (OP 4.36)*: The WB current forests policy aims to reduce deforestation, enhance the environmental contribution of forested areas, promote afforestation, reduce poverty, and encourage economic development. Combating deforestation and promoting sustainable forest conservation and management have been high on the international agenda for two decades. However, little has been achieved so far and the world's forests and forest dependent people continue to experience unacceptably high rates of forest loss and degradation. The Bank is therefore currently finalizing a revised approach to forestry issues, in recognition of the fact that forests play an increasingly important role in poverty alleviation, economic development, and for providing local as well as global environmental services. Success in establishing sustainable forest conservation and management practices depends not only on changing the behavior of all critical stakeholders, but also on a wide range of partnerships to accomplish what no country, government agency, donor, or interest group can do alone. The new proposed forest strategy suggests three equally important and interdependent pillars to guide future Bank involvement with forests; Harnessing the potential of forests to reduce poverty, Integrating forests in sustainable economic development, and protecting vital local and global environmental services and forest values.
- 1.1.8 *Access to Information*: The World Bank policy on *Access to Information* sets out the policy of the World Bank on public access to information in its possession. At the same time, the Bank has an obligation to protect the confidentiality of certain information. This policy endeavors to strike an appropriate balance. It is based on five principles: maximizing access to information; setting out a clear list of exceptions; safeguarding the deliberative process; providing clear procedures for making information available; and recognizing requesters' right to an appeals process. Following an introduction, part two sets out the core policy, and part three sets out how the Bank handles information relating to member countries and other parties, and part four sets out the implementation aspects of the policy.

## CHAPTER IV

### IV. POTENTIAL ENVIRONMENTAL, SOCIAL AND AGRICULTUREE IMPACTS/ISSUES

The proposed project is anticipated to positively contribute to the wellbeing of the targeted beneficiaries, i.e. the farmers. Improvements in irrigation infrastructures and facilities are expected to result in increased agricultural yield and thereby augment farm level income. These are the likely direct positive impacts. Equally, during project implementation/ construction, the project will create, although at small scale, local level employment opportunities wherein locals can make some hard cash. Experiences have demonstrated that poor women, dalits, landless people of the project area tend to benefit as wage-labor. Indirectly, the irrigation systems restored under the project shall result in time-saving which can be utilized for furthering agricultural or other income generating activities by the farmers. At national level, increased agricultural production will add to food security and food safety net.

#### 4.1. Potential Adverse Environmental Impacts

The ICRIAP supports on the rehabilitation of existing relatively small-scale FMIS and selected AMIS that have been built and operated by the farmers. The sub-project location, design, construction and operation expects to have only minimal and localized environmental adverse impacts which can be easily addressed by undertaking effective mitigation measures. The possible adverse environmental impacts that arises in the rehabilitation of the irrigation system and upstream watershed management activities will be;

- Encroachment into critical habitat (protected / conservation / buffer areas /forest areas)
- Change in land use and topography (canal alignment, command area & catchment area)
- Landslide/erosion disrupting the drainage system and water logging problems
- Flood Prone/ Flood Damage within the catchment area
- Cutting of slope, exposure of surface, and haphazard spoil disposal
- Quarry and borrow area operation
- Storage and transportation of construction materials causing drainage blockage, dust and water pollution
- Camp site location and sanitary conditions
- Risks of accidents, health risks, injuries / emergency situation to the workers
- Intrusion of manures and fertilizers by farmers and drained into water bodies
- Hazards associated with the use of toxic chemicals and pesticides

The adverse impacts identified during the implementation of the project shall be documented in the Environmental and Social Management Plan with defined mitigating measures. *(A more detailed and authentic enumeration shall be done after the Field Work.)*

#### 4.2. Potential Adverse Social Impacts

The sub-project activities under ICRIAP are less likely to have significant adverse impacts. The proposed upgrading of infrastructures will have least negative impacts on social considerations. Since the project shall mostly include restoration, rehabilitation and improvement of community level small-scale infrastructures like irrigation and drainage, tube wells, etc the project shall not entail relocation or resettlement. They however may require small plots of land which can be acquired through either voluntary donations or compensation paid by the community. In what follows a tentative list of likely adverse impacts resulting from project activities is presented. These negative impacts can emerge during pre-construction, construction and post construction phases. *(A more detailed and authentic enumeration shall be done after the Field Work.)*

- Private land acquisition may be needed in order to build irrigation infrastructures like head-works, canal widening and extension etc. However resettlement or relocation is not anticipated.
- Delays in the payment of compensation, if any.
- Trivial temporary impacts during construction activities can be expected. Such impacts may include loss of field crop, increased vehicle traffic and works during late hours.
- Loss of livelihood or restricted access to source of livelihood
- There could be public health and safety impacts
- Social and cultural disturbances or community disputes and conflicts emanating from the construction works
- Vulnerable social or cultural groups, indigenous peoples may be evident in the project area. They might get simply ignored and their needs unattended to.
- The project needs to ensure that prior and informed consultations with broad community for their support and participation are held and community needs included in project design.

The Environmental and Social Management Framework (ESMF) will help manage these social issues by defining mitigating measures.

#### **4.3. Potential Adverse Agricultural Impacts**

The sub-project activities under component C of CRIAP are climate resilient and value chain development. These activities trigger after availability of irrigation water from the proposed project. Climate smart approach for agriculture involves climate resilient cropping system and as such will have least negative impact on the environment. Value chain development activities involve software and infrastructure support for postharvest and marketing. Poor management of the activities may result in adverse impacts listed hereunder;

- Indiscriminate use of pesticides, plant nutrients and genetic resources may affect environment and human health.
- The project supports seed and agro-processing activities that may produce objectionable wastes if not treated properly.
- Civil construction works for the establishment of facilities such as storage houses, cold storage, seed production and processing, agriculture production processing, market centers, resource center and nurseries unless managed properly may produce dust pollution, noise pollution, possible water contamination and disturbance to the local community.

*(A more detailed and authentic enumeration shall be done after the Field Work.)*

#### **4.4. Baseline –Case Study of Sub Projects**

(This Section shall include the Summary of the Irrigation Sub Projects (ISP) to be Field investigated)

Details will be attached in Annexes

## CHAPTER V

### V. ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

The present ESMF is drawn up to provide step by step guidelines and procedures to be followed during the implementation of the proposed project, ICRIAP. The basic objective of the ESMF is to ensure that the subprojects under ICRIAP do not cause any significant adverse impacts or adversely affect the local communities where the subprojects are poised for implementation. It further aims to assure that any residual or unavoidable social impacts will be effectively mitigated by the project. The framework lays down the policies, guidelines, procedures; and specific roles and responsibilities of the concerned institutions, community stakeholders and non-governmental organizations (NGO) in implementing environmental and social management activities.

Environmental and Social screening, impact assessment and preparation of Mitigation Plan are the key activities or steps in the process of ESMF construct.

#### 5.1 Detailed Environmental and Social Screening, Categorization

Environmental and Social management procedures shall kick-start with screening of the proposed sub-project. Social screening is the beginning of the processes for managing over-all social impacts/risks or issues. Each sub-project requested for ICRIAP funding has to undergo initial screening process and examined against current GON laws as well as the WB social safeguard policies. The process ascertains the level of environmental and social assessment required in a subproject. It further helps the project entity to comprehend and envision social and environmental risks, issues related to the project; and thus, contribute meaningfully to the decision-making process. The social screening hence helps ascertain;

- whether the sub project is likely to cause negative social impacts
- the scope and magnitude of detailed social assessment
- whether to include or exclude the subproject from ICRIAP list

The environmental and social impact assessment performed through the transect walk, participatory stakeholders' consultation, survey and observations at field, shall finally furnish the substance for an archetype Environmental and Social Management Plan (ESMP). It is suggested that this assessment be taken on concurrently with the technical field verification/ investigation. Social screening checklist is presented in **Annex .....**

Given the subprojects under ICRIAP shall be primarily rehabilitation and improvement of existing irrigation systems, the social impacts are expected to be minimal or of trivial nature.

#### *Procedures:*

- *On-site visit and observation:* This should include a Transect Walk of the irrigation system proposed for undertaking. This is a systematic walk across the community together with local people asking questions, observing and exploring the system' s condition.
- *Stakeholders Consultations:* This includes Focus Group Discussions (FGD) with the prospective community people; secluded discourse with women, Dalits, indigenous people and vulnerable groups; and local government, NGO etc. A range of screening checklists has to be used in order to extract the relevant information.

Based on the information / data collected during screening exercise the subproject can be classified in accordance with the World Bank polices (i.e. Category A, B, C). Similarly ensuing criteria, e.g. (i) likely relocation or displacement or loss of shelter of households (ii) loss of assets (cultivated land,

structures, trees, crops) (iii) loss of common resource and thereby the livelihood; and (iv) loss of access to grazing and water resources shall also be used while screening subprojects.

As the executing agency, the DOI will be responsible for overall planning and implementation of the civil works under ICRIAP. It will hence ensure that IEE and ESMP are prepared for all subprojects and the ESMF is followed during project implementation.

## 5.2 Environmental Assessment (EA)

Environment Assessment is a major instrument applied making the development projects environmentally sound and sustainable. The environmental assessment ensures the protection of the environment from the project activities in accordance with the legal requirement of the Government of Nepal and World Bank by making; i) relevant baseline data collection, ii) identification of the environmental impact due to project activities, iii) proposal for mitigation of the identified impact, iv) management plan for of the implementation of the mitigation measures, v) monitoring plan for the ensuring the compliance of the mitigation measures, vi) monitoring of the impact on the environment due to the project activities and vii) environmental auditing to assess the effectiveness of the proposed mitigation measures. The major steps involved in environmental assessment are;

- a. *Environmental Screening:* Simple environmental screening reports have to be prepared. The Screening report shall comprise of the brief project description and checklist of the environmental screening. A check list should comprise of the list of environmental impacts that could have due the implementation of the projects that would be under taken by ICRIAP. An example of the simple checklist for the Environmental Screening of a rehabilitation of irrigation project is presented in **Annex....**
- b. *Baseline Information Collection:* Baseline information on physical, biological, social, socio-economic and cultural environment is collected from field investigations and secondary sources. The information is required or collected for two main purposes (i) to provide a description of the status and trends of environmental factors against which predicted changes can be compared and evaluated in terms of importance; and (ii) to provide a means of detecting changes by monitoring once a project has been initiated. Details of baseline data collection are presented in **Annex...**
- c. *Identification Environmental Impacts:* A checklist, provided in the baseline study shall serve for the EA team as basis to identify potential impacts that are linked to the proposed project activities, and that shows the different natural and human sectors being potentially.
- d. *Propose Mitigation Measures:* A mitigation measures shall be proposed the undesirable impacts, which includes; preventive and corrective measures, project alternatives in terms of scale, technology used, location, alignment, design and time schedule to minimize impacts and compensatory measures to restore, rehabilitate or replace damaged resources
- e. *Preparation of a Monitoring Plan:* An environmental Management plan for the implementation of proposed mitigation measures shall be prepared. A management plan shall address following what (is the impact), How (that can be mitigated by which method), When (to mitigate), by which method, at what cost, how is the responsible agency for the implementation, what is the parameter for ensuring the compliance of the proposed measures and who shall be responsible for the monitoring.

### 5.3 Social Assessment (SA)

Social Assessment (SA) of a subproject (area) is a careful investigation into the dynamics of the community and a scrutiny of likely societal issues that may crop up with the implementation of the subproject. Given the potential social risks of project implementation are identified; an ensuing work is to propose mitigation measures to address the adverse impacts.

The SA generally furnishes considerable amount of data/information pertaining to the subproject area. It ranges from the delineation of direct and indirect area of influence (subproject confines) to the socio-economic, cultural profile of the area, identification of key stakeholders; and an appraisal of the underlying social and economic factors that may play crucial role in the design and implementation of the project.

Contingent upon the typology of a subproject i.e. FMIS, AMIS, Lift irrigation, Sprinkler etc the SA can be pragmatically succinct, or a rather detailed and time consuming undertaking. The results of screening process will largely decide the level and dexterity of investigation. A more practical and step-wise procedure would be;

- a. *Socio-Economic, Environmental Baseline Survey:* A variety of survey tools like Participatory Rural Appraisal, Rapid Rural Appraisal, Focus Group Discussions, Discourse with community Key Informants, Questionnaire Survey and secluded consultations with vulnerable people, women, dalits, marginal or landless farmers can be utilized to collect information/data. The baseline data pertains to collection of physical, socio-economic, agricultural and cultural information of the project area. The information enables to learn about the social and environmental setting of the project areas and identify the resources likely to be affected by project activities. The project on completion of the survey will disseminate the survey results among the affected community. To supplement baseline data and present complete picture of the subproject area secondary information is also collected from various government and NGOs. **Annex....**
- b. *Identification and Analysis of Potential Impacts:* Based on the baseline information collected, field observations, discourses and findings, the most likely impacts of the subproject on the physical, socioeconomic and cultural resources are identified. For this baseline data/information have to be suitably analyzed and germane deductions are drawn up. In doing so, the impacts of the subproject at all the 3 stages i.e. preconstruction, construction, and operation & maintenance need to be assessed. The environmental and social impacts thus identified, will have to be reviewed considering government regulations and WB safeguard policies. Notwithstanding above, most of the ICRIAP subprojects are small in nature and hence may trigger localized and reversible impacts. The sample social impacts are presented in **Chapter....**
- c. *Minimization or Mitigation Measures Prescription:* Once the potential social impacts have been identified, and their significance, magnitude, determined appropriate mitigation measures have to be prescribed to minimize or avert the adverse impact. As far as possible site specific mitigation measures will have to be devised as one size may not fit all. Similarly for the positive impacts of the project, benefit augmentation measures can be suggested.

#### 5.4 Watershed Management Plan (WMP)

The watershed involves combine resource types with the relationships among land use, soil, water, flora, fauna and human communities. Watershed management is the dynamic interaction of water, land, vegetation and other resources influenced by climate and topography. Government of Nepal has formulated numeral plans and policies regarding the watershed management strategy. Considering the management strategies, the ICRIAP project will direct its management intervention in the watershed areas of the FMIS. The management strategies are intended to (i) restoration of degraded lands (ii) protection or prevention of watershed degradation and mitigate, to an acceptable level, effects of land use practices (considered to produce needed goods & services)

The performance of irrigation systems that divert river flows to a canal network is directly related to the catchment areas from which irrigation water supplies originate. Watersheds that are degraded due to over-grazing and deforestation cause erosion with rivers carrying high bed loads that accelerate canal siltation, thus significantly impacting the maintenance costs and shorting the life of irrigation infrastructure.

The ICRIAP project proposes improved catchment management activities to be promoted through increasing community awareness program with the participation of appropriate stakeholders. The management activities will basically include the following sub-components.

- Conservation education to the concerned stakeholders/residents
- Vegetation and grazing management
- Source protection and landscape stabilization

In FMIS the sub-project boundary shall be considered as; i) Irrigation Command Area and ii) Catchment Area. An institutional linkage between the stakeholders/user groups in the upstream catchment area and downstream irrigation command area is essential strategy for the implementation of WMP. Both areas stakeholders need to work together; and actions are based upon shared information and a common understanding of the roles, priorities and responsibilities of the parties involved. Whereas in AMIS the catchment areas of the irrigation system are larger where the landscape management cost will be too high. Hence, the project shall initiate only the possible landscape protection activities around the headwork sites as per requirement in AMIS sub projects.

The WMP implementation can be made more effective by accommodating the provision for partnerships with CBOs and NGOs. This provision emphasizes the formation of user groups and the need to involve them in planning, implementation and decision making. The project will support the community forests user groups to implement conservation practices in the upstream watershed area for the positive impacts on the irrigation system at downstream.

The ICRIAP has come out with the strategy of watershed management plan in the FMIS to ensure water availability in downstream climate resilient irrigated agriculture system. The basic steps<sup>5</sup> to be followed in FMIS for an effective watershed management is proposed here under as watershed management plan.

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<sup>5</sup> A quick Guide to Developing Watershed Plans ( United States Environment Protection Agency)

**Table 1: Basic Steps for Watershed Management Plan for FMIS**

<b>STEP 1</b>	<b><i>Build Partnerships</i></b>	➤ Identify key stakeholders
		➤ Identify issues of concern
		➤ Set Preliminary Goals
		➤ Develop Preliminary Indicators
		➤ Conduct public outreach programs
<b>STEP 2</b>	<b><i>Characterize Watershed</i></b>	➤ Gather existing data and create a watershed inventory
		➤ Identify data gaps and collect additional data if needed
		➤ Analyze data
		➤ Identify causes and sources that need to be controlled
<b>STEP 3</b>	<b><i>Finalize Goals and Identify Solutions</i></b>	➤ Set overall goals and management objectives
		➤ Develop indicators/targets
		➤ Identify critical areas
		➤ Develop management measures to achieve goals
<b>STEP 4</b>	<b><i>Design an Implementation Program</i></b>	➤ Develop an implementation schedule
		➤ Develop monitoring component
		➤ Develop information/education component
		➤ Develop evaluation process
		➤ Identify technical and financial assistance
		➤ Assign responsibility for reviewing and revising the plan
<b>STEP 5</b>	<b><i>Implement Watershed Plan</i></b>	➤ Prepare work plans
		➤ Implement management strategies
		➤ Conduct monitoring
		➤ Conduct information/education activities
		➤ Share results
<b>STEP 6</b>	<b><i>Measure Progress and Make Adjustments</i></b>	➤ Track progress
		➤ Make adjustments

### 5.5 Resettlement Planning Framework (RPF)

The whole gamut of *Resettlement Planning Framework* is to avoid, or minimize and wherever displacement or relocation can't be averted, mitigate the losses incurred due to subprojects' potential adverse impacts. The objective is to offer fitting resettlement guidelines to identify impacts, and to control or minimize any adverse impact on the people affected by the project.

The RPF formulates the resettlement and compensation principles to be employed so as to address the needs of project affected peoples. In the process the RPF provides guidelines for identifying people, communities who may be affected by the project activities, and suggests measures, institutional arrangements to avoid/minimize such adverse impacts.

The present RPF is prepared taking into account the applicable legislation of the GON as well as the Operational Policies (OP) 4.12 of the World Bank. The RPF is applicable to all sub-projects to be funded under ICRIAP.

Guiding Principles of the Framework:

- As far as possible involuntary resettlement or relocation will be avoided or minimized
- In cases where displacement can't be averted, the affected people shall be well informed, consulted and encouraged to participate in planning and implementation of the resettlement programs.

- For inescapable land acquisition, the affected persons shall be compensated at the replacement value of the land. Likewise they will be supported to improve their livelihood or as a minimum, to restore them at without project level.
- Lack of legal title to land shall not be an impediment to compensate for structures, house, and trees/crops. As vulnerable groups tend to be in such status, attention will be paid to provide suitable assistance to them for improving their status.
- Land compensation and resettlement assistance will be concluded prior to civil works contract award. This will make part of the sub-project costs and hence included in the total cost.

#### *Eligibility and Entitlements:*

For the purpose of this framework Project Affected People (PAP) are defined based on the magnitude of their losses, may it be fixed assets, source of income, livelihood etc. The following groups of people are eligible and hence entitled to compensation and assistance under ICRIAP:

(a) Project Affected People includes any person or persons or households who because of project activities would have their: (i) standard of living adversely affected; (ii) legally recognized title, or interest in any house, land (including residential, agricultural and grazing land) or any other moveable or fixed assets acquired or possessed, in full or in part, permanently or temporarily, and; (iii) place of work or residence or habitat adversely affected, with or without displacement.

(b) Seriously Project Affected Families (SPAFA): Families who lose 25 percent or more of their land or income or a residential house because of project activities.

(d) Squatters: People who have unlawful annexure of public land are not eligible and entitled to compensation for loss of land. However, they are entitled to resettlement assistance if displaced as well as compensation for loss of assets other than land, in particular, structures and crops.

(e) Vulnerable Groups: Distinct groups of people who are socially distressed or economically backward and who might suffer disproportionately from resettlement effects. These include, but are not limited to the following: all ethnic minority/indigenous groups present in the Terai and hill districts, women-headed households, the most poor (based on the poverty line and local wealth ratings), the disabled, elderly and landless/kamaiya families.

Thus, the affected persons in the project will be entitled to various types of compensation and resettlement assistance that will help restore their livelihoods, at least, to the pre-project level.

**Table 2: Entitlement Policy**

Type of loss	Entitled person	Policy/Entitlement
<b>Private land, Tenancy land</b>	Titleholder Tenants	<ul style="list-style-type: none"> <li>• Land Replacement, or cash compensation at replacement value; Tenant will collect 50% value of land. For vulnerable groups, land replacement should be pursued.</li> <li>• Any transfer costs, registration fees or charges,</li> <li>• Land registration in the name of both land owner and spouse (in case of land for land compensation),</li> <li>• If remaining land becomes unviable as a result of land acquisition, APs have an option to relinquish unviable remaining portion of land and receive similar benefits to those losing all their land parcel(s),</li> </ul>
<b>Occupied Public land</b>	Non titleholders (Encroachers/ Squatters)	<ul style="list-style-type: none"> <li>• Non-titleholders are not entitled to compensation for the affected but unlawful annexure of public land. Vulnerable encroachers with economic losses may be entitled to</li> </ul>

Type of loss	Entitled person	Policy/Entitlement
		resettlement assistance as a vulnerable group. <ul style="list-style-type: none"> <li>• Non-titleholders will receive compensation for crops and subsistence allowance for one year's crop.</li> </ul>
<b>Temporary loss of land</b> (during civil works)	Titleholder Tenants	<ul style="list-style-type: none"> <li>• Advance notice for crop harvesting</li> <li>• Compensation at replacement cost for the net loss of income, damaged assets, crops and trees etc.</li> <li>• Prior agreement between contractor and affected persons</li> </ul>
<b>Loss of Houses residential, commercial, and other structure</b>	Titleholder Non- titleholders (encroachers and squatters)	<ul style="list-style-type: none"> <li>• Compensation for full or partial loss at replacement cost of the affected structure(s) without depreciation/deduction for retrieved material. Both titleholders and Non-titleholders are eligible for compensation to the loss of structures.</li> <li>• Resettlement assistance to those most vulnerable groups to restore pre-displacement level livelihoods.</li> </ul>
<b>Loss of community structures and/or resources</b>	Users of the facility or the community	<ul style="list-style-type: none"> <li>• Reconstruction or reestablishment of such facilities, or</li> <li>• Cash compensation at full replacement cost without depreciation of deduction for salvaged material</li> </ul>
<b>Loss of trees and crops</b>	Owner of the affected fruit/nut trees	<ul style="list-style-type: none"> <li>• Advance notice for harvesting</li> <li>• Cash compensation based on annual value of the produce and calculated according to Department of Agriculture (DOA) norms,</li> </ul>
	Owners and sharecroppers of affected crops	<ul style="list-style-type: none"> <li>• Advance notice for harvesting</li> <li>• Cash compensation based on local market prices for the produce of one year and calculated as per the norms of District Agriculture Development Office,</li> <li>• 50% cash compensation of the lost crop for the sharecropper</li> </ul>
<b>Voluntary Land donations</b>	Voluntary donation only if AP: (i) is direct beneficiary and is consulted with (ii) Adult family members have agreed to; (iv) willing to donate (with an agreement, including "no coercion" verified by third party) and (v) donation is less than 10% of landholding.	<ul style="list-style-type: none"> <li>• No compensation will be paid for donated land.</li> <li>• Transfer of land ownership by negotiation (DDC and the owner).</li> <li>• Free/escape of any transfer costs, registration fees, or charges.</li> <li>• Preferential employment in sub-project construction work</li> </ul>

### **Resettlement Action Plan (RAP):**

The Resettlement Action Plan (RAP) is a document that takes stock of PAP and families, enumerates the area to be acquired for the project and provides the modality of relocation or resettlement of PAP. In fact it is plan for mitigation measures. The RAP is based on the information gathered from census survey of affected people and inventory of lost assets.

At the outset, all sub-projects are to be screened for their potential adverse impacts. If the issues related to resettlement are triggered, the RAP will have to be prepared for the concerned sub-project.

The RAP may begin with why the need for involuntary resettlement, its objective and strategy. The detailed content may include baseline census and socio-economic survey data/information; legal

framework, including eligibility criteria and entitlement matrix; land ownership, acquisition, and transfer; inventory, valuation of, and compensation for, lost assets; specific compensation rates and standards; description of resettlement sites and programs for improvement or restoration of livelihoods; organization responsibilities; community participation and disclosure arrangements; mechanisms for dispute resolution; a detailed cost estimate with budget; a time implementation schedule; and monitoring of activities.

The above plan will be prepared as soon as a subproject is selected for implementation. Sub projects that are less likely to have land acquisition or any other significant adverse social impacts will not be required to prepare such RAP.

### **Grievance Redress Mechanism**

The project shall constitute at each sub-project level, a grievance redress committee GRC wherein the project affected people PAP can appeal any disagreeable decisions, practices and activities arising from compensation for land, assets settlements, and technical or general project related disputes. The GRC a locally constituted committee will consist of four-members representing the project office IDD, an elected member (local government) of the project area, the WUA and one member from the public, a person of integrity, and who commands respect in the community. The formation of such GRC will be widely disseminated in the project area by offering details of the structure and process in redressing grievances.

The PAPs can submit their grievances orally or in writing at the Committee. The committee however shall maintain a Register and record all complaints/grievances received and the action taken on each of them. A summary report of the same shall be submitted, on a quarterly basis, to the relevant IDD by the committee.

## **5.6 Vulnerable People and Gender Development Plan**

### **5.6.1 Vulnerable Group Development Plan**

**Vulnerability** refers to the inability to withstand the effects of a hostile environment. This could be the people or community who owing to its social and economic standing, is unable to endure the effects of change that may be hostile to their status-quo. The vulnerable people are both socially as well as economically disadvantaged persons and are susceptible to change. Vulnerability can be the result of the interplay of several factors, nevertheless in our context 3 major groups are identified more vulnerable than others and they are women, dalits and janjatis<sup>6</sup>. These groups are economically marginalized and disadvantaged with regard to (i) access to livelihood, assets and services; (ii) social inclusion and empowerment; and (iii) legal inclusion and representation. During the project implementation, the project may affect such vulnerable people's communities. The construction works may intrude on the vulnerable communities living in the zone of influence of the sub-project areas. Hence these groups, communities also should be included as the stakeholders of a development

<sup>6</sup> Classification of Vulnerable Groups/Janajati in Nepal

1.	Endangered Groups	Bankariya, Kusunda, Kushbadia, Raute, Surel, Hayu, Raji, Kisan, Lepcha, Meche
2.	Highly Marginalized Groups	Santhal, Jhangad, Chepang, Thami, Majhi, Bote, Dhanuk (Rajbansi), Lhomi (Singsawa), Thudamba, Siyar (Chumba), Baramu, Danuwar
3.	Marginalized Groups	Sunuwar, Tharu, Tamang, Bhujel, Kumal, Rajbansi (Koch), Gangai, Dhimal, Bhote, Darai, Tajpuria, Pahari, Dhokpya (Topkegola), Dolpo, Free, Magal, Larke (Nupriba), Lhopa, Dura, Walung
4.	Disadvantaged Groups	Jirel, Tangbe (Tangbetani), Hyolmo, Limbu, Yakkha, Rai, Chhantyal, Magar, Chhaintan, Tingaunle Thakali, Bahragaunle, Byansi, Gurung, Marphali Thakali, Sherpa
5.	Advanced Groups	Newar, Thakali

[Source: National Foundation for Indigenous Nationalities (NEFIN) 2004

project. The World Bank's Operational Policy on Indigenous People (OP 4.10) also necessitates to identify potential effect and prepare plan to ensure that indigenous people receive social and economic benefits. Similarly a range of GON legal provisions<sup>7</sup> and policies on vulnerable communities has laid extra emphasis on the delivery of basic services to the disadvantaged and indigenous people, occupational castes, women, disabled and other vulnerable groups. It is therefore required that as a precautionary measure, the Vulnerable People Development Plan (VPDP), be prepared in the subprojects to be funded under ICRIAP.

On the whole the VPDP aims to ensure that the vulnerable, indigenous people and Dalits are engaged and actively partake in project activities with equal opportunity to access project benefits at par with the rest of the community.

More specifically the VPDP intends to;

- Ensure participation of the poor, marginal, landless and vulnerable groups in planning, execution and monitoring process of the project by creating an enabling environment.
- Guarantee access to and accrual of project benefits to all disadvantaged groups of the project area
- Ensure either minimization or mitigation of adverse impacts of the subproject.
- Capacity building of disadvantaged and vulnerable groups so as to enable them express their needs and hold the system accountable for their benefits

### Processes

- i. Conduct Baseline socio-economic field surveys and identify the locations where vulnerable communities, groups are sited. This survey will reflect the economic status of such groups; including their landholding, poverty level, livelihood options and their dependence on the sub-project.
- ii. Carry out disclosure meetings in identified communities; and interaction with village leaders to share information about the project. Our basic objective is to make sure that vulnerable groups of the subproject areas are consulted and well informed.
- iii. Assess whether these communities shall be adversely impacted by the project activities. Social impact assessment will ascertain the degree and nature of impact of a subproject. This assessment will further help to decide the support or special assistance package needed to respond to the requirements.
- iv. In subprojects wherein land acquisition and resettlement is required the VPDP should define and develop special mechanism to address the precise needs of such people or groups.
- v. Specific vulnerable community development action program, activities should be devised in consultation with such groups and the programs should be included in the subproject document.

Regular but meaningful consultations with the target beneficiaries during all stages of the sub-project development; planning, design, construction and implementation of agricultural activities have to be carried out. Based on such consultations appropriate assistance package in accordance with the specific priorities of such groups have to be devised.

A sample Vulnerable People Development Plan is presented here below;

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<sup>7</sup> Constitution of Nepal 2015, National Foundation for Upliftment/Development of Indigenous Nationalities Act 2002, Local Self-Governance Act, 1999, Forest Act 1993 and Forest Regulation 1995, Irrigation Policy 20113

Table 3: Vulnerable Community Development Plan

Project Activities	Target group	Performance Indicators	Responsibility
<b>1. Information Dissemination</b>			
<b>Dissemination of Subproject Information through:</b> <ul style="list-style-type: none"> <li>☞ Posters, Leaflets sharing (on site, municipality offices)</li> <li>☞ Public Meetings, Consultations</li> <li>☞ Local Radio/ FM</li> <li>☞ Hire Social Mobilizers, Community Organizers.</li> </ul>	ALL beneficiaries	<ul style="list-style-type: none"> <li>- Consultation meetings held with list of participants. More than 50% of participants in consultation are from marginal/small holders, dalits</li> <li>- At least 50% of social mobilizers / community organizers are from dalit, indigenous community</li> </ul>	IDD/Project WUA
<b>Periodic consultations with key stakeholders.</b>	Offices of the Local Govt. Agri/Livestock, Forest/Soil and Water Conservation, NGO/CBO	<ul style="list-style-type: none"> <li>- Project updates shared / discussed</li> <li>- Minutes/records</li> <li>- Number of consultation &amp; participants with social disaggregated data</li> </ul>	IDD/Project WUA
<b>Design Sharing with Vulnerable Groups</b> <ul style="list-style-type: none"> <li>☞ Organize exclusive consultations for disadvantaged</li> <li>☞ Share / present the draft design, seek suggestions</li> <li>☞ Accommodate and include the diverse needs</li> </ul>	Disadvantaged, Vulnerable Groups, Women Other Beneficiaries	<ul style="list-style-type: none"> <li>- Number of exclusive consultations organized</li> <li>- Program / Activities included in the subproject</li> </ul>	IDD/Project
<b>2. Participation in Project Activities</b>			
<b>Formation of Inclusive WUA committees / sub-committees / IPM farmers' groups</b>	Marginal, landless farmers, encroachers Middle & Tail enders	<ul style="list-style-type: none"> <li>- WUA committee has 33% representation from the Head, Middle, Tail as well as from the vulnerable people.</li> </ul>	IDD/Project WUA
<b>Provision for Income Generating Activities &amp; Training</b> <ul style="list-style-type: none"> <li>☞ Identify Income Generating Activities (IGA) for people, both in area of direct and indirect influence, particularly upstream catchment to ensure their participation.</li> <li>☞ Develop/design specific training programs for IGA;</li> <li>☞ Deliver skills improvement/enhancement Trainings</li> </ul>	Dalits, Janjati, small and marginal farmers, landless squatters	<ul style="list-style-type: none"> <li>- Training conducted with more than 50% of the participants from disadvantaged group, women</li> <li>- IGA started and visible in the project area</li> <li>- NGO hired; Training conducted by NGO.</li> </ul>	IDD/Project NGO

☞ Engage NGO if needed to conduct the training			
<p><b>Employment Opportunity</b></p> <ul style="list-style-type: none"> <li>☞ Create opportunity for vulnerable people to work as wage labor during the civil works/construction and implementation of agricultural programs</li> <li>☞ Accord priority to land less, women, squatters while hiring as wage labor in construction site and in processing and marketing of agricultural produce.</li> <li>☞ In WUA payable works and commercial agriculture vulnerable groups must be engaged as wage labor</li> <li>☞ Ensure equal pay to men/women for equal amount of works</li> </ul>	<ul style="list-style-type: none"> <li>- Landless farmers, sub-marginal farmers, Dalit, women, squatters</li> </ul>	<ul style="list-style-type: none"> <li>- Arrangements are made with the civil works contractors and agro-entrepreneurs to engage locals as wage labor</li> <li>- Equal/identical wage rate paid to men, women</li> <li>- WUA follows a strategy to hire landless, dalits women and small holders.</li> </ul>	<p>IDD/Contractor / WUA</p>
<b>3. Special Agriculture Support Program</b>			
<p><b>Quick Yielding Commercial Agriculture Activities</b></p> <ul style="list-style-type: none"> <li>☞ Devise quick cash yielding agriculture programs (viz. vegetable production, mushroom farming, bee-keeping goat raising etc) aimed at dalits, women and vulnerable groups</li> <li>☞ Provide for inputs like foundation seeds under project</li> <li>☞ Provision of Technical support, agro based income generation training for quick return agriculture activity</li> </ul>	<p>Small holders Marginal farmer Dalits, Women headed households Vulnerable groups</p>	<ul style="list-style-type: none"> <li>- Number of groups formed to participate in the program</li> <li>- Number of HH who partake in the program and receive inputs under the project</li> <li>- Training participants' number</li> </ul> <p><b>(In all activities listed, 50% participants are from the target groups).</b></p>	<p>Project/ Agriculture component</p>
<p><b>Linkage Development and Networking</b></p> <ul style="list-style-type: none"> <li>☞ Connect beneficiary groups with postharvest, market and value chain development support program under project's agriculture aspect.</li> <li>☞ Facilitate access to rural credit and farm inputs by connecting groups with cooperative, agro vet service provider etc</li> <li>☞ Facilitate in utilization of public land (riverbed, flood plains farming, agro-forestry etc) under special agricultural program</li> </ul>	<p>Small and marginal land holders, DAG</p> <p>Landless and ultra-poor</p>	<ul style="list-style-type: none"> <li>- MOU signed between agriculture agency at local body and WUA for link up of the target group with agriculture component.</li> <li>- Number of DAG households receiving service from cooperatives and other service provider</li> <li>- Farmer's group formed for riverbed farming and 30% participants are from landless.</li> </ul>	<p>Project/ Agriculture component</p>

### 5.6.2 Gender Development Plan

Well entrenched archaic socio institutional structures and cultural values essentially have limited the women's access to and control of resources in Nepal. These structures are largely external and beyond individual control. But as women are equally entitled to benefit from the development activities conscious efforts are needed to solicit and augment their participation. This is now markedly realized and the Government of Nepal (GON) unveiled Irrigation Policy (2003) requires all Water Users' Associations (WUAs) to have at least 33% women's representation in the Executive Committees. Yet, as of now the 33% women's participation goal continues to be elusive in the irrigation sector, particularly in terms of their involvement in the decision making process.

Marginalization of women in development activities is much talked about but less attended to issue. Women feel left out from the mainstream of development. Among others, some of the reasons attributed to for this plight are;

- a) Low educational attainment and ignorance preclude women from participation. Illiteracy is more prevalent among women than men
- b) Women basically lack access to and control over land owing to socio-cultural traits;
- c) In the absence of required collateral, women don't have access to credit facilities
- d) Lack of access to agriculture inputs like seeds, fertilizer, extension services, technology, etc; and
- e) Women normally have insufficient time at their disposal because of other responsibilities and house-hold errands.

In view of above, inclusion of women in irrigation development and management may prove a daunting task. Exceptional efforts therefore have to be made under ICRIAP for mainstreaming women and redressing gender imbalance. And this should kick-start with gender responsive public consultations. Women representation has to be ensured while mapping out the potential adverse and/or favorable impacts of a subproject. Further, while gender analysis should constitute as a part of social impact assessment, mainstreaming actions will have to be thought through during the design phase. In the process even differential access to project benefits for women may need to be considered. The major concern of the project shall be to contemplate on, how best to minimize project's negative impact on women.

Given the constrictions of women's active participation, the project should adopt strategies to amicably address these constraints. Some of the strategies to redress gender discrepancy are suggested below;

- |       |   |      |  |
|-------|---|------|--|
| (i)   | Awareness raising of Women                          | (ii) | Increased access to resources, viz. land |
| (iii) | Involve women in Market -Value-Chain                | (iv) | Capacity building                        |
| (v)   | Involve women in decision making and implementation |      |  |

As ICRIAP seeks to enhance the role of women in order to promote fair distribution of irrigation benefits in the community; the Project shall develop a Gender Development Action Plan with specific provisions. A sample GDP has been prepared and attached here below for reference.

**Table 4:** Gender Development Plan

<b>Problem Areas</b>	<b>Strategy</b>	<b>Proposed Activities</b>	<b>Responsibilities</b>
Low educational attainment, ignorance, Low literacy	Awareness raising of Women	<ul style="list-style-type: none"> <li>- Conduct women responsive consultations, meetings, and interactions with women groups</li> <li>- <i>Learning from fellow farmers</i>: For women leaders and WUA members, hold exposure visits to better performing Irrigation Schemes</li> <li>- Promote functional literacy and include literacy program in agriculture support activities</li> <li>- Use audio-visuals aides to communicate messages for illiterate women</li> </ul>	Project, IDD, GWFO, WUA, NGO
Women don't have access to land, credit facilities	Increased access to resources i.e. land, credit (credit without collateral)	<ul style="list-style-type: none"> <li>- Project assists to streamline processes for land acquisition by women</li> <li>- Share information on the availability of various types of credit in the area</li> <li>- Identify the possibility of credit without collateral and facilitate</li> <li>- Facilitate in accessing credit under Groups' collateral</li> <li>- Arrange special credit scheme with focus on women</li> </ul>	NGO, WUA in cooperation of local financial institution
	Involve women in the decision making of WUA by conceding them WUA membership	<ul style="list-style-type: none"> <li>- Make WUA committees more inclusive</li> <li>- Ensure 33% of committee membership to Women</li> <li>- Ensure Women are included in Key position as well</li> <li>- Open General Membership of WUA to all in the CA, including women, non-titleholders etc.</li> </ul>	IDD/GWFO, NGO, WUA
Women are unskilled, and trail behind in leadership qualities	Capacity Building	<ul style="list-style-type: none"> <li>- Organize training on leadership for women WUA members</li> <li>- Include women in various trainings like <i>Construction Quality Control</i>; and <i>Operation and Maintenance of Irrigation System</i> etc. to ensure quality monitoring and sustainability.</li> <li>- Design and deliver specific capacity building programs focusing on management, communication skills, bookkeeping, governance, accountability etc.</li> </ul>	IDD/GWFO, NGO, WUA in partnership with a training organization

Lack of agricultural know-how and access to extension services, technology	Follow need-based agricultural extension and support services	<ul style="list-style-type: none"> <li>- Create Women's Groups to receive Agricultural Ext. Services</li> <li>- Use women for information dissemination and needs identification</li> <li>- Organize special trainings on improved agricultural practices including IPM, &amp; experiential learning using demonstration plots for women</li> <li>- Conduct learning oriented observation visits to agricultural farms, research stations, progressive farmers</li> <li>- Help develop linkages with agriculture-marketing network</li> <li>- Promote Agro-based Income Generating Activities</li> <li>- Assist and ensure timely supply and use of seeds, fertilizers, pesticides and technical know</li> </ul>	Local body Agri. Agency, NGO, WUA, IDD,
Lack of access to agriculture inputs like seeds, fertilizer etc (No marketing access)	Involve women in Market - Value –Chain	<ul style="list-style-type: none"> <li>- Promote and encourage Groups Marketing by women</li> <li>- Encourage WUA to perform multi-functions, assist in converting WUA into Cooperative</li> <li>- Provide for cooperative training to women/WUA members</li> <li>- Avail market information</li> </ul>	Local body Agri Agency, NGO, WUA, IDD, District Cooperative

## 5.7 Pest Management (PM) and Nutrient Management (NM)

### 5.7.1 Pest Management Plan (PMP)

The major output of pest management for proposed project is a Pest management report, which includes Pest Management Plan (PMP). In view of the increasing importance of improving the quality of project implementation and to ensure compliance with required mitigation and monitoring measures identified, Pest Management report will include, as part of PMP, government or related agency undertakings built-in the Pest management and monitoring plan.

Pest management involves the implementation of Integrated Pest control and mitigation measures and monitoring of significant pest impacts. Integrated pest control measures are adopted to (i) mitigate pesticides impacts, (ii) provide climate resilient plant protection alternatives or (iii) enhance environmental resources. These measures are usually set out in PMP, which covers all phases of the project and outlines mitigation and other measures that will be undertaken to ensure compliance with pesticide regulations and reduce or eliminate adverse impacts. The PMP will also cover a proposal for recommending the proposed project to use pesticides that are safe and environmentally friendly.

The contents of a PMP should include the following:

- a) Summary of potential impacts
- b) Description of planned mitigation measures
- c) Description of planned pest monitoring
- d) Description of planned public consultation process
- e) Description of responsibilities for the implementation
- f) Description of responsibilities for reporting and review
- g) Work Plan: staff chart, schedules, activities and inputs of all including lead agencies
- h) Procurement Plan that is legally responsible
- i) Detailed cost estimates
- j) Mechanism of feedback and adjustment

#### ***Pest Monitoring Plan***

Pest monitoring involves (i) planning a survey and sampling program for systematic collection of data/information relevant to pest impact assessment and pest management; (ii) conduct of the survey and sampling program; (iii) analysis of samples and data/information collected, and interpretation of data and information; and (iv) preparation of reports to support pest management. Pest monitoring is normally carried out before and during planning to establish baseline data needed for pest assessment and evaluating pest impacts during project implementation. It continues through project operation to detect changes in the key pest invasion parameters, which can be attributed to the project. The results of the monitoring program are used to evaluate the following: (i) extent and severity of the pest impacts against the predicted impacts; (ii) performance of the plant protection measures or compliance with pertinent rules and regulations; (iii) trends in impacts; and (iv) overall effectiveness of the PMP.

Pest monitoring should have clear objectives, and the survey and sampling program designed to focus on data required should meet the objectives. In addition, the design of the monitoring program has to take into account its practicability considering the technical, financial, and management capability of the institutions that will carry out the program and period of monitoring that will be needed to achieve the objectives. The monitoring program should include action or emergency plans so that appropriate action can be taken in the event of adverse monitoring results or trends.

An effective Pest Monitoring Plan should include:

- Realistic sampling programme (temporal and spatial)
- Sampling methods relevant to sources
- Collection of quality data
- Comparable new data with other relevant data used in environmental assessment
- Cost-effective data collection
- Quality control in measurements and analysis
- Appropriate databases
- Data interpretation
- Internal reporting and external checks
- Allowance for third party inputs
- Avenues for public participation (e.g. public presentations, external assessments)

Both the pest management and monitoring plans need to include who will implement them, when, and where. The capacity of the executing agency, Local Government and community organization should be reviewed to identify feasible approach for implementing the plans. The project lifecycle should be taken into account in setting the timing of implementation. For example, the PMP should identify pest mitigation measures. On the other hand, the location for monitoring should be selected based on where the impacts would occur and the areas to be affected. To ensure that the pest management and monitoring plans will be implemented, it is necessary to identify the key management issues to be included.

### 5.7.2 Plant Nutrient Management Plan

Plant Nutrient Management (PNM) embraces soil, nutrient, water, crop, and vegetation management practices, tailored to a particular cropping and farming system, undertaken with the aim of improving and sustaining soil fertility and land productivity and reducing environmental degradation. Plant Nutrient Management aims to optimize the condition of the soil, with regard to its physical, chemical, biological and hydrological properties, for the purpose of enhancing farm productivity, whilst minimizing land degradation. The field level management practices considered under the heading of Integrated Plant Nutrient Management (IPNM) would include the use of farmyard manures, natural and mineral fertilizers, soil amendments, crop residues and farm wastes, agro-forestry and tillage practices, green manures, cover crops, legumes, intercropping, crop rotations, fallows, irrigation, drainage, plus a variety of other agronomic, vegetative and structural measures designed to conserve both water and soil. The following are fundamental to the approach outlined in the plan:

1. The focus for IPNM should be on sustaining the productive potential of the soil resource.
2. Soil and plant nutrient management should be promoted as an integral part of a productive farming system.
3. IPNM requires the adoption of improved rainwater management practices (conservation tillage, tied ridging etc), so as to increase the effectiveness of the seasonal rainfall.
4. With declining soil organic matter levels following cultivation, the adoption of improved organic matter management practices is prerequisite for restoring and maintaining soil productivity (improved soil nutrient levels, soil moisture retention, soil structure and resistance to erosion).

At the farm field level IPNM calls for an integrated and synergistic approach which involves:

- Matching the land use requirements of individual agricultural enterprises with the land qualities present in the areas where they are undertaken - i.e. the biological, chemical and physical properties of the soil, and the local climatic conditions (temperature, rainfall etc.);
- Seeking to improve yields by identifying and overcoming the most limiting factors in order of their diminishing influence on yield;

- Better plant management, especially: (i) improved crop establishment to increase protective ground cover thereby reducing splash erosion, enhancing infiltration and biological activity; and (ii) timely weeding to reduce crop yield losses from competition for nutrients and soil moisture;
- Combinations of complementary crop, livestock and land husbandry practices which maximize additions of organic materials and recycle farm wastes, so as to maintain and enhance soil organic matter levels (ideally at levels of at least 50-75% of those under natural vegetation);
- Land management practices that ensure soil moisture conditions favorable for the proposed land use
- Refueling soil nutrients lost by leaching and/or removed in harvested products through an integrated plant nutrition management approach that optimizes the benefits from all possible on- and off-farm sources of plant nutrients.
- Combinations of crop, land and livestock husbandry practices that reduce rainfall impact, improve surface infiltration, and reduce the velocity of surface runoff thereby ensuring any soil loss below the 'tolerable' level for the soil type;
- Conservation tillage, crop rotation, agro forestry and restorative fallow practices that maintain and enhance the soils physical properties through maintaining an open topsoil structure and breaking any hard pan (hoe/plough pan) thereby encouraging root development and rainfall infiltration.

IPNM also contributes to pest management. Crops growing in poorly structured soil, under low or unbalanced nutrient conditions or with inadequate water supply or retention will be stressed. Stressed crops are more susceptible to disease and to the effects of pest attacks.

Production efficiencies are gained through the integrated nutrient management practices promoting combined use of mineral, organic and biological resources in a reasoned way to balance efficient use of limited/finite resources and ensure ecosystem sustainability against nutrient mining and degradation of soil and water resources.

Nutrients are in many ways linked to other practices that are related to sustainable crop production intensification. Nutrient cycling is the main focus of Conservation Agriculture, in which minimum soil disturbance, intercropping, crop rotations and a permanent soil cover minimize the need for chemical fertilizers. High application of fertilizers can increase the occurrence of noxious weeds that compete with crops for nutrients. This means that Integrated Weed Management is promoted by improving the timing, dosing and application method of nutrients and thus minimizing the potential impact on weed growth. A better application of nutrients also reduces runoff, and by this the overall agricultural biodiversity and the pollination services.

The management of nutrients is one of the most important, but also complicated issues in crop-livestock systems. Nutrients can come from manure, legumes, and external inputs. A closed cycle – without external inputs - would be ideal from an environmental point of view but might not always be feasible due to soil constraints, difficulties for growing legumes or other nitrogen fixing crops, or lack of options for spreading the manure around the farm. Recycling can be done to effectively use both on-farm and off-farm wastage. For crop and fodder production a combination of mineral and organic fertilizers can be applied from on-farm and off-farm sources. The crop rotations in the crop-livestock systems would preferably also include crops that are beneficial from a nutrient point of view (e.g. legumes). A balanced nutrient level in the soil will contribute to sustainable crop (and livestock) production intensification – this means that a focus should be on farm level, and not on the fertilization of single crops. The focus of farmers should be on the total farm area and on the long-term effect of fertilization. This includes making a shift from static nutrient balances to nutrient flows in cycles. The content of PNM Plan should include the following.

- Field (or site) assessment – includes soil test information, area, soil texture, estimated length and grade of any slopes, problem soil conditions (e.g., acidic soils) and limiting physical features such as environmentally sensitive areas (e.g., water bodies).
- Manure inventory – includes estimated nutrient content (from lab analysis or standard values), estimated manure volume(s) and desired information about the animal population or the operation (e.g., number of animals, phase of production, housing and feeding system, etc.).
- Nutrient application plan – includes information about manure application and incorporation methods, equipment calibration, planned crop rotation, cropping system, planned application rate (manure and fertilizer), timing of application and incorporation, and the nutrient on which application is based (i.e., NPK).
- Land management plan – includes information on production practices and other control systems to reduce post-application nutrient losses.
- Record keeping system – includes a system of record keeping that complies with the record-keeping requirement for manure application.

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## CHAPTER VI

### VI. STAKEHOLDERS' CONSULTATION AND DISCLOSURE PROCESS

#### 6.1 Community Consultation & Communication Strategy

Community Consultation and Communication is a process or tool to validate the legitimacy of project activities. Wider consultations with and the disclosure of project features to the potential beneficiaries, stakeholders are considered effective tools for soliciting, augmenting participation. Cognizant of this conviction, the design of development projects strongly push for extensive consultations and discourse with the involved community. The present ESMF equally advocates for such communication and disclosures. However, precise modality of the interface with the affected community would be discerned after the completion of field works as the process would be project sites specific and very much informative to beneficiaries. In what follows, therefore, a generic approach to community consultation is underscored.

The objective of Community Consultation and Communication is to keep all stakeholders well informed of the project activities. It is premised on the notion that transparency encourages participation. Interface with the public at large offers opportunities to share information pertaining to the project objectives and scope, alternative design options, and stakeholder perceptions regarding the proposed intervention. Stakeholders' consultation seeks the opinion of local communities and other stakeholders; and weighs up suggested mitigation measures to minimize adverse impacts of the project arising thereof. The consultation therefore needs to be a continuous process during the entire project cycle.

Public consultation is an essential criterion under World Bank policies. As a rule, Consultations will have to be carried out before and during the project implementation in compliance with the national legislation as well as the WB Policy on Disclosure. The Environmental Protection Regulation (EPR) 1997 of GON requires that consultations with the potential beneficiaries, project affected persons, and local populace have to be conducted ensuring their participation at all stages of project implementation. Thus it is an important strategy for an environmental and social analysis process. Opinion and stance of the potential beneficiaries as well as project affected persons need to be solicited and taken into account during the project preparation. In fact unrelenting and meaningful consultations have to form as a basis for pragmatic refinement of the design and implementation process all through the ICRIAP implementation period.

#### 6.2 Consultation Framework and Methodology

Community consultation approach and methodology can largely depend on the nature and scope of the subprojects under consideration. Consultation needs to be carried out in a manner commensurate with the impacts on affected communities

Effective consultative process may include varieties of methods ranging from opinion survey in the broad area of influence to isolated project affected groups' meetings. It likewise may include a predesigned questionnaire survey of the community at large as well as interactions with community based organizations. Equally, community at large includes households within the direct area of influence together with people or households within the indirect area of influence. Sharing of the project's basic information like sites, magnitude of impacts, both adverse as well as positive social benefits, sustainability, and the outcome of the project will be the sine qua non of such consultations.

At the outset key project stakeholders should be identified at the central, sub-national and/or field level. While putting up the present ESMF repeated interactions were held at Project Office<sup>8</sup> at the center. Likewise, discourses were carried out with key officials of the World Bank<sup>9</sup> Nepal office and the consultants working with the preceding project. This was helpful to weigh up the level of pledge and concern with the project implementation as well as to get hold of pertinent information, documents. At the field level, relevant district offices, NGO/CBO and local communities, women, dalits and vulnerable groups shall be consulted.

For reference purpose a generic consultation framework is proposed hereunder;

**Table 5: A Generic Consultation Framework<sup>10</sup>**

Stages	Strategy	Form of Consultation	Ways of Information Dissemination
<b>Screening</b>	<ul style="list-style-type: none"> <li>• Site visits</li> <li>• Desk work</li> </ul>	<ul style="list-style-type: none"> <li>• Public Meetings, Interaction, FGDs</li> <li>• Transect walk with the local people</li> </ul>	<ul style="list-style-type: none"> <li>• Provide information on project's activities</li> <li>• Use local language/Nepali language</li> </ul>
<b>Project Formulation</b>	<ul style="list-style-type: none"> <li>• Identification of beneficiaries, PAP,</li> <li>• Develop consultation method &amp; Schedule,</li> <li>• Consultation with beneficiaries, PAP</li> <li>• Consideration of necessary changes</li> </ul>	<ul style="list-style-type: none"> <li>• Public Meetings</li> <li>• Special Group meetings</li> <li>• Workshop,</li> </ul>	Orientation in local/ Nepali language
<b>Impact Assessment</b>	<ul style="list-style-type: none"> <li>• Impact assessment and management process,</li> <li>• Scoping,</li> <li>• Alternative option,</li> <li>• Mitigation measures</li> </ul>	Workshop, meetings, FGDs, site surveys	Orientation in local/ Nepali language
<b>Implementation and monitoring</b>	<ul style="list-style-type: none"> <li>• Consultation and collaboration based on project activities</li> </ul>	Workshop, meetings, group formation	Orientation using local/ Nepali language

Following mechanisms and/or mode of information sharing have frequently proven effective and hence a judicious use of them, in isolation or in combination, should be adopted.

- *Print Medium*
  - Poster, Leaflets
  - Letters
  - Newspaper
- *Digital Technology*

<sup>8</sup> March 25 , April 01 &15, 2018

<sup>9</sup> March 29, 2018

<sup>10</sup> Adapted

- Radio FM
- Television
- Mobiles
- Public Address Systems
- *Interface and Discourse*
  - Public Meetings
  - Specific Group Meetings
  - Seminar / Workshops
  - Community Messengers
  - Change Agents engaged by project

### 6.3 Community Consultation and Participation Plan:

Consultation and Communication activities have to be devised and implemented as a regular phenomenon during the entire process of project cycle. Meaningful consultation is a process that begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle. It provides timely disclosure of pertinent and sufficient information that is easily understood by and readily accessible to the affected people. The exchange is in an environment that is free from intimidation or coercion and open to the views of affected people and other stakeholders.

**Sub-project Planning Phase:** This phase is inclusive of subproject identification, screening, prioritization, planning, and design of the project activities. It is at this phase where initial consultation shall start. The basic information dissemination device at this phase may contain simple summary of the project description and objectives, and potential adverse effects of the proposed project and likely mitigation measures. At this phase, extensive formal and informal consultations and meetings with stakeholders are suggested.

All inclusive consultations with primary as well as secondary stakeholders should be held at the beginning of subproject activities. Primary stakeholders are the direct beneficiaries or for that matter those who are affected by the subproject. Secondary stakeholders on the other hand include those who have a stake in or can influence the outcome of the project. In our project, ICRIAP, they can be resident organizations, local government bodies as well as people living in areas of indirect influence like upstream of head-works or catchment.

Planning phase or preconstruction consultations are instrumental in enhancing participation of the community people as it sets up a stage for discourse, articulation of views/needs and feedbacks. The interface with the community thus provides opportunities to identify the social and environmental issues, likely mitigation measures; their needs and priorities; and thereby augment greater participation from the beginning.

**Sub-project Construction Phase:** Meaningful Community Consultation at this stage ensures smooth sailing of the subproject. Project beneficiaries or the stakeholders need to know how they would be involved in the entire process of implementation. People should be well aware of their roles and responsibilities; and how they could share the anticipated benefits, may it be the temporary ones like short term employment etc. Frequent discourse and transparency can avert potential conflicts in the community. Finally, inclusion and involvement of the community in implementation process is likely to promote sense of ownership.

**Post Construction (O&M) Phase:** As users will assume the operation and maintenance (O&M) responsibility of the system developed, appropriate communication and participation becomes of critical importance. Users, committee members responsible for overseeing the O&M could be taken to exposure/observation visits to better managed and well performing irrigation systems for learning. Likewise, post construction consultation, advice and support, particularly in the agriculture area will

contribute to the increase in yield. Finally, transparency in WUA operations can be made effective by setting-up a community monitoring system.

***Community Consultation & Participation Plan:*** Given the need for frequent consultation and communication with project beneficiaries at different stages of project implementation confirmed, it would be imperative to draw a doable communication plan. Following is a sample communication plan that can be referred to for the subprojects under ICRIAP. The proposed activities contained therein are identified based on the experiences gathered in similar projects. They however may change depending on the specific subproject site and its environment. The changes therefore have to be duly incorporated in accordingly.

**Table 6:** Community Consultation and Communication Plan

ation & Communication Issues	Suggested Strategies	Proposed Activities	Responsibility
<ul style="list-style-type: none"> <li>- <b>Lack of awareness about social safeguard, gender and inclusion aspects of the project even within project staff</b></li> <li>- <b>Lack of awareness, information about the project</b></li> <li>- <b>Available information tends to be Inadequate.</b></li> <li>- <b>Project Benefits as well as the adverse impacts are not well defined</b></li> <li>- <b>Ambiguity in the information about land acquisition, displacement, mitigation measures.</b></li> </ul>	<ul style="list-style-type: none"> <li>- Carry out Information awareness campaigns</li> <li>- Use mass media to raise awareness.</li> <li>- Engage change agents like Community or Social Mobilizers for field level works</li> <li>- Ensure Change Agents are local and if possible, from the indigenous community, women and/ or Dalit,</li> <li>- Use traditional mode of communication prevailing in the community, i.e. Chowkidar or "Katuwal"</li> <li>- Use local Radio</li> </ul>	<ul style="list-style-type: none"> <li>- Hold orientation seminar/workshops for Project staff focusing on Gender and Social Inclusion; safeguard</li> <li>- Organize information campaigns using posters, leaflets newspapers, letters, banners, radio, television, and Public Meetings</li> <li>- Use Public Address System in local markets, Bazaars</li> <li>- Prepare Project Features in Nepali and share during interface with the beneficiaries, public consultations.</li> <li>- Share project brief, printed materials with the local institutions, NGOs, CBOs and line agencies etc</li> <li>- Use local leaders, esteemed persons of the community for group meetings with indigenous and vulnerable groups.</li> <li>- Use of local radio/ FM to disseminate information in local language</li> <li>- Through IDD, engage Community/Social Mobilizers to work with the project beneficiaries</li> <li>- Make repeated efforts to spread information, mainly in disadvantaged or vulnerable community.</li> </ul>	Project / IDD & WUA
<p><b>Interplay of different Interest Groups</b></p>	<ul style="list-style-type: none"> <li>- Follow transparency in information sharing</li> <li>- Educate stakeholders on various aspects of the project i.e. potential issues, magnitude of problems, mitigation measures etc.</li> <li>- Adopt visibility enhancement strategy</li> </ul>	<ul style="list-style-type: none"> <li>- Conduct consultation at each stage of project cycle, planning, design, implementation etc.</li> <li>- Mobilize local institutions for advocacy and support</li> <li>- Hold frequent meetings, periodic interactions amongst various stakeholders.</li> <li>- For visibility enhancement, invite socio-political leaders &amp; officials operating at the district or high—ups for site visits and discourses.</li> <li>- Prepare information and communication materials focusing on issues/ rights and the opportunities for the disadvantaged and poor people</li> </ul>	Project / IDD & WUA

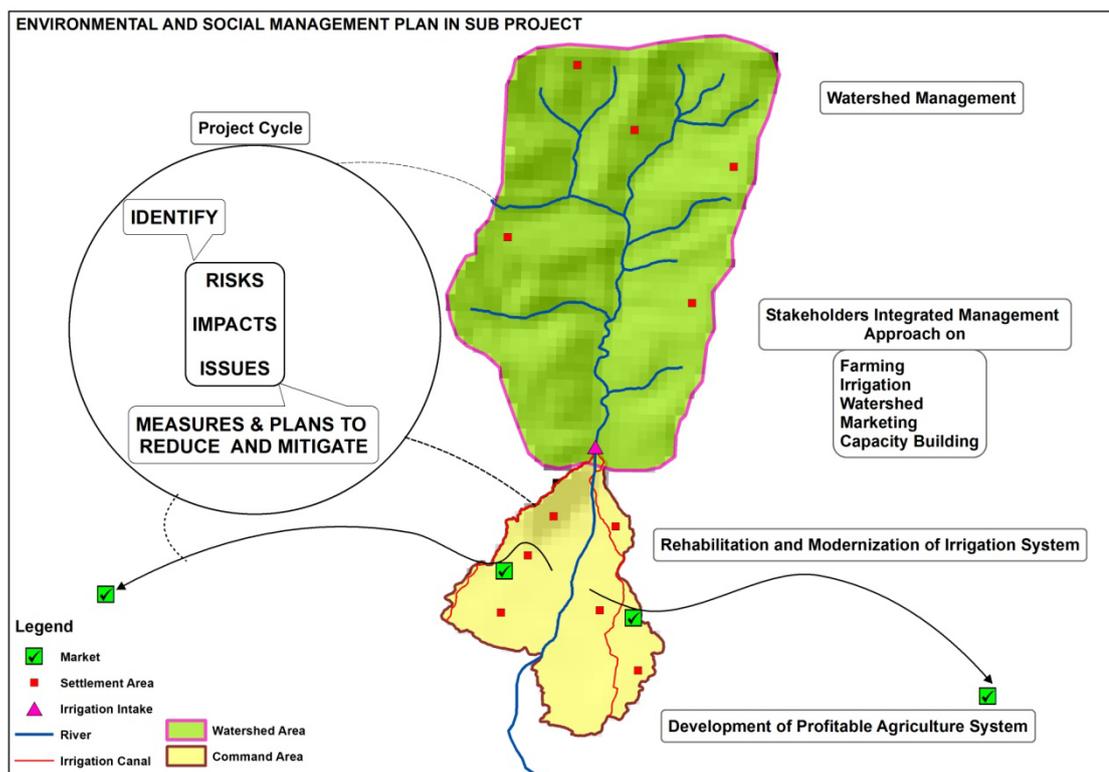
<b>Low level of literacy (mainly amongst women, indigenous groups, landless and Dalits).</b>	<ul style="list-style-type: none"> <li>- Provide for functional literacy program as social safeguard measures in the project</li> </ul>	<ul style="list-style-type: none"> <li>- Engage CBOs/NGOs working in the project area</li> <li>- Establish functional coordination with them</li> <li>- Mobilize CBO/NGOs to conduct custom made training programs and integrate literacy classes with the skill development trainings.</li> <li>- Customize training programs to meet the needs of communities and groups with varied socio- economic characteristics.</li> </ul>	Project / IDD
<b>Limited Access to Information mainly for the Disadvantaged people and women</b>	<ul style="list-style-type: none"> <li>- Promote women's active participation in meetings.</li> <li>- Ensure equal partaking, both quantitative and qualitatively, by the women and DAG in irrigation user groups and committees;</li> <li>- Ensure men and women have equal access to project information;</li> </ul>	<ul style="list-style-type: none"> <li>- Design gender sensitive information campaign.</li> <li>- Mobilize women members of the apex and branch committees in information dissemination activities.</li> <li>- Organize meetings such that women of all caste/ ethnic groups are able to participate.</li> </ul>	Project / IDD/WUA
<b>Vulnerable Community Needs are Ignored</b>	<ul style="list-style-type: none"> <li>- Ensure need- based Project Design( include Livelihood Support program )</li> <li>- Ensure DAG's fair representation in WUA committees as well as binding membership in Irrigation User Groups</li> </ul>	<ul style="list-style-type: none"> <li>- Prepare communication materials explaining how issues of DAG shall be addressed.</li> <li>- Include livelihood support program for vulnerable groups</li> <li>- Develop the skills of the irrigation user groups and committees to oversee project- related activities</li> <li>- Mobilize NGOs/CBOs to ensure active participation of different Irrigation user groups including DAG.</li> <li>- NGO/CBOs shall ensure fair representation of DAG in the various committees of WUA.</li> </ul>	Project / IDD/WUA/ NGO/CBOs

CHAPTER VII

VII. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The Environmental and Social Management Plan (ESMP) identifies and assesses the social and environmental impacts resulting from the proposed development activities and prepare management plan, which addresses the ways to mitigate adverse social and environmental impacts, enhance beneficial impacts, and monitor the adoption of social and environmental mitigation measures to ensure the implementation of recommendation suggested by Environmental and Social Assessment (ESA).

The Innovative and Climate Resilient Irrigated Agriculture Project (ICRIAP) envisages an integrated approach to the sustainable development of irrigated agriculture comprising three parts, namely: the watershed protection and landscape management as this has a direct bearing on the irrigation sources; the irrigation system itself; and, profitable agriculture in the command area. The project has focused on the climate smart approach to agriculture to reduce the vulnerability of production systems in the command area and make cropping patterns and management practices more climate resilient. Considering all these approaches the ESMP report shall be prepared as an integral part of the sub-project plan during the Environmental and Social Assessment studies.



In FMIS the sub-project boundary shall be considered as; i) Irrigation Command Area - where the irrigation systems and the agriculture activities are carried out and ii) Catchment Area – the upstream watershed and landscape management activities that ensures the continuity of the water source for the irrigation system. In AMIS the catchment areas of the irrigation system are larger where the landscape management cost will be too high. Hence, the project shall initiate only the possible landscape protection activities around the headwork sites as per requirement in AMIS sub projects.

According to WB procedures, activities already identified for financing under the ICRIAP project fall under Environmental Category B due to their potential impacts. WB Operational Policy OP 4.01 requires environmental assessment and development of site specific EMPs for projects belonging to Category B. The

sub-projects under ICRIAP also meet the national environmental and social requirements as per the environment protection regulation of the Government of Nepal. Thus the ESMP report preparation is made mandatory for all the sub-project under ICRIAP.

The Environmental and Social Management Plan of a sub-Project under ICRIAP will cover the following:

- Identification of environmental and social impacts, both positive and negative
- Assessing the magnitude of each impact
- Identification of set of measures to mitigate the potential impacts
- Identification of measures to enhance the positive environmental and social impacts of the project interventions
- Determination of site specific, detailed requirements for ensuring that those responses are made effectively and in a timely manner and
- Description of the means for meeting those requirements

### **7.1 Contents of ESMP Report**

An outline of the activities for conducting ESMP is presented below:

- I. Environmental and Social Screening
- II. Desk Study
- III. Stakeholders Consultation
- IV. Field Assessment and Baseline Data Collection
- V. Mapping of sub-project components/Social Mapping (Intake, canal alignment, cross drainages, command area, roads, upstream watershed, river, forest, water sources etc)
- VI. Identification of Environmental/Social Impacts and Mitigation Measures
- VII. Consideration of Alternatives
- VIII. Grievance Redress Mechanism
- IX. Design of Environmental and Social Management Plan
- X. Mitigation Cost Assessment
- XI. Monitoring Mechanism
- XII. Information Disclosure to Stakeholders

### **7.2 Integration of ESMP with Sub-projects**

The ESMP must be prepared for each sub-project and it should be site specific. It should have a detail description of the impact, mitigation and monitoring measures for each sub-project activity, and its assignment of the institutional responsibilities. The ESMP thus prepared should be effectively executed in the sub-projects as mandated by the Bank and agreed by the project office. It should be integrated in the planning, designing, budgeting and implementing the sub-projects. This ESMP must be prepared before tendering of civil works contracts and reviewed and approved by DOI. To ensure the integration of ESMP with subprojects, DOI's authorization to the project office to designate ESMP preparation and monitoring/evaluation (M/E) team (with sound knowledge in social, environmental and agriculture aspect) is necessary to assist in ESMP capability building process. Also a participatory ESMP review workshop shall be organized for the central level stakeholders.

## VIII. INSTITUTIONAL ARRANGEMENT

As the disposition of Federal/Province/District/Local level institutions remains to be defined clearly and their responsibilities delineated, it is expected that field visits shall help clarify them, hence this section will be worked out after field study. However, the chapter will include following sub sections.

### **8.1 Environmental Institution Assessment**

### **8.2 Social Institution Assessment**

### **8.3 Agricultural Institution Assessment**

### **8.4 Proposed Institutional Strengthening and Arrangement**

### **8.5 Implementation Capacity Building**

- Assessment of capacity to undertake ES safeguard measures
- Programs for capacity building
- Costing
- Who does the training-Outsourcing

## CHAPTER IX

### **IX. MONITORING AND REPORTING ARRANGEMENTS**

Since Federal /province/local government linkages are yet to be clearly known and understood, the team feels that the scenario will be clearer after lapse of some time. Hence this section shall be accomplished after the Field Work which is expected to take about 1 month. However, the chapter will include following sub sections.

#### **9.1 Project Monitoring**

#### **9.2 Environmental Monitoring Plans**

#### **9.3 Reporting Arrangements**

#### **9.4 Environmental and Social Safeguard Specialist to PIU**

#### **9.5 Project Supervision Consultant to PIU**

#### **9.6 Third Party Monitoring**

#### **9.7 Auditing**

## **ANNEXES**

## Annex I

### Baseline Environmental Checklist

#### *A. Project Related Information*

1. Sub-Project Name:

Location (Rural Municipality/Municipality):

Ward No:

District:

State No.:

Intake Location:

Elevation:

Longitude:

Latitude:

River Source:

Elevation extent:

Command Area (ha.):

Main Canal Length (km):

No. of Branch Canal:

Total number of Beneficiaries HH:

Total Population:

Male:

Female:

Stakeholders (Forest Type with Name, Village Name):

2. Upstream Watershed Information

Rural Municipality/Municipality:

Ward No:

Catchment Area (km<sup>2</sup>):

Elevation extent:

Longitude extent:

Latitude extent:

Total number of Beneficiaries HH:

Total Population:

Male:

Female:

Stakeholders (Forest Type with Name, Village Name):

3. Major problems in existing irrigation facilities:

4. Major works to be accomplished (Describe such as construction of head-works, lining of canals, realignment of canals, no. of cross drainage structures, etc):

#### *B. Physical Environment*

5. Physiographic (topography, land use and geomorphology) details:

6. Geology (rock types, quality, satiability and seismicity):

7. Land uses and land use pattern (Zol):

Existing land use along the canal alignment, command area and catchment area: (Describe in length and area in terms of forest, cultivated land, built up area, and others):

8. Soil Type:

Soil Type of command area:

Soil type of canal alignment:

Soil structures and fertility of command area:

9. Drainage (type and characteristics):

Source of river:

Dry season flow:

Current water use of river in D/S and U/S (Irrigation, hydropower, water mills, drinking water and others) :

Water adequacy situation:

Water quality:

Sediment condition:

Morphological condition of water sources within catchment area:

Describe the high flow situation and flooding frequency:

Requirement of protection works:

10. Erosion within Zol Area:

11. Existing landslides and potential landslide areas within Zol Area:

12. Climate of Project (temperature, precipitation, wind direction, humidity and sunshine hour):

13. Existing and potential stone quarries along with quantify required and produced:

14. Location of Quarry Site, spoil disposal and its suitability:

**C. *Biological Environment***

15. Types of Forest:

Type of forest	Name of Forest	Main Species
Government		
Community managed		
Leasehold		
Private		
Religious		
Plantation		

16. Community Forests (if any):

Name of Community forest: \_\_\_\_\_

Total number of households in CF \_\_\_\_\_ Established Date \_\_\_\_\_ Area in ha \_\_\_\_\_

Ethnicity of the users (i.e., major caste of users) \_\_\_\_\_

Major Plant Species \_\_\_\_\_

Plant species of economical importance \_\_\_\_\_

Wild Animals \_\_\_\_\_

17. Total forest area within the sub-project area (Zol):

18. Major Vegetation:

S.N.	Local Name of Plant	Used For	Remarks
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

19. Ethno-botanical Information:

SN	Local Name of Plant	Use				Status					Remarks
		Timber	Firewood	Fodder	Medicine	Common	Frequent	Sparse	Rare	Endangered	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

Note: Use tick mark (√)

20. Is the project area adjacent to or within any of the following environmentally sensitive areas?

- Protected Area
- Buffer Zone Area
- Conservation Area
- Wetland Areas
- Mangrove Areas

21. Wildlife's core habitat in and around sub-project area:

## 22. Information on Wild Animals and Birds

SN	Local Name	Status			Hunting/Poaching for		
		Common	Rare	Endangered	Meat	Skin	Others
<b>Wild Animals</b>							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
<b>Birds</b>							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Note: Use tick mark (√)

## 23. Information on Reptiles

SN	Local Name	Common	Uncommon	Habitat	Remarks
<b>Snakes</b>					
1					
2					
3					
4					
5					
<b>Lizards and others</b>					
1					
2					

3					
4					
5					

Note: Use tick mark (√)

24. Information on Aquatic Life

SN	Local Name	Common	Uncommon	Habitat	Remarks
<b>Fish Species</b>					
1					
2					
3					
4					
5					
6					
7					
8					
9					

Note: Use tick mark (√)

***D. Other Information (if any)***

25. Presence of government or private farms and/or industries, recreational areas, drinking water source within Zol Area:

26. Commercial plantation activity:

27. If yes, name of plants planted, and objective of plantation

Name of Plant:

For timber or firewood production:

NTFPs:

Recreation:

Rehabilitation of encroached areas:

28. Natural and plantation areas within Zol area and species composition:

29. Existing forest fires and potentials:

***E. Potential Climate and Disaster Risk in the Sub-Project Area***

30. Is the sub-project area subject to hazards?

- Earthquakes
- Floods
- Landslides
- Fire hazard
- Climate change

31. Do you know about NAPA, LAPA, and CAPA?

32. Adaptation activities conducted - Yes/No

33. If yes when, who and how much duration the adaptation measures conducted in the sub-project area

34. Climate Change-changes in temperature, precipitation, or extreme events patterns over the project area affects the water availability, crop water requirement and peak flood (past & present context)

## Annex II

### Baseline Social Checklist

#### I. General

1. Name of proposed irrigation sub-project (ISP):
  2. ISP Location (VDC, district, and state):
  3. Source of system and its location (VDC):
  4. Size of CA currently served (ha.):
  5. Total number of beneficiary HH:
  6. Ethnicity Majority Minority Dalits
  7. Length of the main canal in meter:
  8. Main canal Extension(s): Yes No;
- Expected CA after rehabilitation (ha.):
- |                                |   |              |
|--------------------------------|---|--------------|
| Population                     | M | F            |
| Indigenous HH                  |   | women headed |
| Branch Canals:                 |   |              |
| If Yes, additional length: ... |   |              |

#### II. History

##### *Irrigation System*

- When constructed: Canal running since (history): Year .....
- Who started or built it? Funding:
- How it was built
- Who looked after it
- Farmers' way of living before the Irrigation Scheme
- Any outside support (New construction/finance)..... First.....Second support
- Any natural disaster? What? When?
- Who is responsible for the upkeep of the community water infrastructure?
- Water availability in the canal: Year round ( ) or Seasonal ( )
- Is water available in dry season? How is water managed during the water-scarce season? By whom?
- Who decides the allocation?

#### III. Major Environmental Changes

- Major Environmental changes noticed?
  - Aggregation / Degradation (Raising and lowering) of Riverbed.
  - Discharge fluctuations.
  - Change in River Morphology (river course, shape and size)
  - Fluctuation of GW Table, detection of Arsenic in the vicinity
  - Deforestation, Aforestation

#### IV. General Social /WUA

- Is there a WUA? When formed, and registered?
- Committee members, their names – representative from head middle and tail of canal, females, Dalits in committee, how many are active? Can women influence meeting decisions
- Meetings, how often? ... Regular meetings, minutes kept?
- What is general participation of WUA members (%) in such meetings?
- Has WUA a Bank Account? How much is in the Account
- Is Irrigation fee collected, how much per .....
- How many are defaulters and since how long?
- Are there any (social) conflicts? ..... Will the SP create the conflict among the people?
- Are there any important cultural or archeological sites nearby?
- Will the ISP need acquisition of land (public or private, temporary or permanent) for its development?
- Will anyone be prevented from using economic resources (e.g. pasture, fishing locations, forests) to which they have had regular access?
- Will the project result in the involuntary resettlement of individuals or families?
- Will the ISP cause loss of livelihood?
- Might the project adversely affect communities or vulnerable people living in the area? How Many?
- Are there community/PAPs located along/ close to project that may benefit from this project?
- Do the people know about the project?

- Nearest market center and type of the connecting road to the market
- Any other issue?

#### V. *Resettlement Concerns*

- Will the subproject require acquisition of collectively owned land, state-owned land or land held by community under traditional, customary rights?
- Will the subproject require any temporary land occupation for the construction of facilities?  
Location; Land Area; How Many Farmers' Land etc
- Will access to common properties (e.g. burial grounds, community facilities, public grazing lands, forest, etc) be restricted by subproject activities?
- Will land acquisition result in loss of individual housing and/or affect other structures?
- Will agricultural activities, income and livelihoods be negatively affected by the operation of the irrigation system?
- Are there any non-title holders whose living arrangements, livelihoods will be affected by the subproject?
- Will there be loss of agricultural plots?
- Will there be loss of incomes and livelihoods?
- Are there any outstanding grievances or unpaid compensation?

#### VI. *Indigenous (IP), Vulnerable People<sup>11</sup> Concerns*

- Are IPs belonging to the Endangered category listed below present in subproject locations?  
(*Bankariya, Hayu, Kusbadiya, Kusunda, Lepcha, SurelRaji, RauteKisan, Meche/Bodo*)
- Are other IPs present in subproject locations? Name?
- Will the subproject restrict their economic and social activity and make them vulnerable?
- Will the ISP disrupt their community life and cause change in their socioeconomic and cultural integrity?
- Will the project alter the recognition of their traditional knowledge, preclude customary behaviors?
- Will there be loss of incomes and livelihoods?
- Do such groups have traditional cultural practice, economic, social, and political institutions distinct from the dominant society and culture? Language/dialect spoken? Will the ISP affect them?
- Has such groups been historically, socially and economically marginalized, diESMPowered, excluded, and/or discriminated against?
- Will the project directly or indirectly benefit or positively affect livelihoods of Indigenous Peoples?
- Will the project Acquisition of lands that are traditionally owned or customarily used, occupied or claimed by indigenous peoples?

#### VII. *Gender Concerns*

- Do men and women perceive positive and negative impacts of the project differently?
- Are the benefits likely to be distributed equitably between men and women?
- What may be the gender-specific implications of the subproject?
- What factors affect the level of men's and women's participation? Incentives and constraints?
- Which modes of participation do men and women favor (e.g., decision making in planning, cash or, labor contribution for construction, training, financial management, organizational management)
- Identify key gender and women's participation issues.
- What can be the role of gender in the project activities?
- Executing agency's capacity and commitment to participatory approaches and gender focus.
- Assess Status of women: Political representation and awareness etc.
- Broad gender division of labor in productive (e.g., agriculture, income generating) activities
- Income sources, Expenditure patterns and decision making, by gender
- Land ownership, tenure and use, by gender

#### VIII. *No. of community infrastructures likely to be damaged* (Description):

#### IX. *No. of cultural sites within the project area likely to be damaged:*

#### X. *Other Stakeholders at site*

(a) NGOs, CFUGs: (b) Cooperatives/farmers groups: (c) Source sharing other groups.

#### XI. *Anticipated Project Impacts* Positive Impacts Negative Impacts

<sup>11</sup> Check whether they fall within they 59 Indigenous People (IP) listed in the Act (NFDIN, 2002 AD, 2058 BS)

## Annex III

### Specific Group Checklist

#### *Project affected people (PAP)*

- Ethnic groups in the community, name and %:
- Will there be loss of land (private and public)?
- Are people willing to contribute land voluntarily?  
(Voluntary land donation forms)

Will any of the properties are likely to be affected due to sub-project activities?

- School - Market - Water Resources / Springs - Private Land - Buildings/Structures - Temples/ Mosque/Bihar  
- Landslide prone zone - National/Community Forest - Chautara & other public area

#### *Women*

- No. of women headed HH in community? Major occupation:
- Average family size Education/literacy Average land holding
- Source of livelihood Food sufficiency
- Is there wage difference between men and women?
- Do you participate in irrigation system maintenance? If no why?
- Out migration
- Who makes decision in the family, agricultural matters?
- Are you in WUA committee? What position?
- What are your major needs?
- What assistance/support is required?

#### *Indigenous People /Dalit/Vulnerable*

- No. of Indigenous people HH in community? Average family size occupation:
- No. of Dalit HH in community? Average family size occupation:
- Source of livelihood for IP for Dalit
- How long they have been living in the area? IP Dalit
- Food sufficiency What are their major needs?
- What assistance/support is required?
- Explain cultural system: Speak own language?

#### *General Questions*

- Do men and women perceive positive and negative impacts of the project differently?
- Are the benefits likely to be distributed equitably?
- How can negative effects be minimized or mitigated?
- Who manages water for agricultural use and how?
- Is there conflict between agricultural and domestic water allocation? How are needs prioritized?
- Are there conflicts in water distribution in general, based on gender, income level, ethnicity/castes?  
How can these be solved?
- Who is responsible for the upkeep of the community water infrastructure?

#### *Opinions about the proposed subproject:*

## **Annex IV**

### **Baseline Agriculture/Integrated Pest Management Checklist**

#### *A. Checklist for FGD (WUG/ farmers/IPM groups)*

- 1) Use of pesticides and chemical fertilizers; their effect in plant and soil health and consequent impact on human health.
- 2) Use of plant hormones and growth regulators
- 3) Farm irrigation methods and water use (on-farm water management practice)
- 4) Farm machinery use- type and intensity
- 5) Soil amendments (agriculture lime, micronutrients use)
- 6) Preparation and use of organic manure

#### *B. Checklist for Key Informants*

- 7) Agronomic practices of major crops
- 8) Cropping pattern/Crop rotation
- 9) Productivity status of major crops
- 10) Resilience of farming systems to the effects of climate change
- 11) Post-harvest processing and storage practices
- 12) Marketing channels and markets
- 13) Fisheries/Livestock raising practices
- 14) Limiting factors and possible mitigation measures of more intensive cultivation
- 15) Soil erosion, flooding, drainage.

#### *C. Checklist for NGO/CBO and Local Government*

- 16) Available processing and storage facilities
- 17) Availability of road and electricity within the sub-project command area
- 18) Agro-input and output marketing facilities (Agrovet, collection center, hat bazar, retail market, wholesale market etc.)
- 19) Market information

## Annex V

### Environmental Checklist for Screening of Sub-project

Sub-Project Name: \_\_\_\_\_ Rural Municipality/Municipality: \_\_\_\_\_ Ward No: \_\_\_\_\_  
 District: \_\_\_\_\_ State No.: \_\_\_\_\_  
 Intake Location: \_\_\_\_\_ Longitude: \_\_\_\_\_ Latitude: \_\_\_\_\_ Elevation: \_\_\_\_\_  
 Command Area (ha.): \_\_\_\_\_ Main Canal Length (km): \_\_\_\_\_ No. of Branch Canal: \_\_\_\_\_

**Delineation of the Geographical Boundary i.e. Zone of Influence (Zoi):** The Zoi of the subproject area has been considered as the irrigation command area and 50m to 100m distance from the centreline of the canal (depending upon the topography, forest area and the settlement) and the upstream catchment area (for FMIS).

S.N.	Screening Questions	Does the project fall in the below category				Remarks (with details is compulsory)
		Impact	IF Yes			
		Yes /No	Low Impact	Medium Impact	High Impact	

**ENVIRONMENTAL BASELINE CONDITIONS OF SUB-PROJECT AREA**

**A. PROJECT SITING**

1	Is the project area adjacent to or within any of the following Environmentally sensitive areas? <ul style="list-style-type: none"> <li>• Protected Area</li> <li>• Buffer Zone Area</li> <li>• Conservation Area</li> <li>• Wetland Areas</li> <li>• Mangrove Areas</li> </ul>					
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**B. ECOLOGICAL RESOURCES**

2	Forest and Vegetation					
3	Wildlife					
4	River Aquatic Life					
5	Source of Construction Materials					
<b>C. PHYSICAL ENVIRONMENT</b>						
6	Land Use and Topography (canal alignment, command area & catchment area )					
7	Landslide/Erosion (canal alignment, command area & catchment area )					
8	Flood Prone/ Flood Damage (canal alignment, command area & catchment area)					
9	Drainage System (canal alignment, command area & catchment area)					
10	Water Right Issues (water abstraction at 500 m U/S and D/S of the intake site) and possible water conflicts					
<b>POTENTIAL ENVIRONMENTAL IMPACTS LIKELY TO OCCUR</b>						
<b>D. ENVIRONMENTAL PROBLEMS DUE TO IMPLEMENTATION OF THE SUB-PROJECT</b>						
11	Encroachment into protected / conservation / buffer areas or forest areas					
12	Loss of trees and crops along the canal alignment					
13	Impediments to movements of wildlife, livestock and people					
14	It expedite landslide/erosion or it is likely affected by landslide and erosion disrupting irrigation system					
15	Activities increases the flood prone areas or is likely affected by the flood damages & flood prone areas					

16	Excessive water inflows from adjacent slope and water logging problems					
17	Excavation activities from the intake and canal					
18	Construction material sites (Quarry Sites)					
19	Stockpiling of construction materials					
20	Operation of construction equipment and transport					
21	Work camp location and operation					
22	Occupational health and safety					
23	Effect on downstream water use					
24	Suitability of water quality for Irrigation (Sediment load /GW arsenic content)					
25	Over pumping of Groundwater and changes in groundwater hydrology					
26	Intrusion of manures and fertilizers by farmers and drained into water bodies					
27	Hazards associated with the use of toxic chemicals and pesticides					
28	Adverse soil modifications					
29	Downstream water quality problems					
<b>E. ENHANCEMENT POTENTIALS DUE TO IMPLEMENTATION OF THE SUB-PROJECT</b>						
30	Employment to the people					
31	Community water supply in command area					
32	Livelihood programs for the local people					
33	Aquaculture in command area					

34	Source protection and landscape management works in Zol area					
35	Vegetation plantation in Zol area					
36	Conservation training to the concerned stakeholders/residents					
<b>POTENTIAL CLIMATE AND DISASTER RISK IN THE SUB-PROJECT</b>						
37	Is the sub-project area subject to hazards; <ul style="list-style-type: none"> <li>• Earthquakes</li> <li>• Floods</li> <li>• Landslides</li> <li>• Fire hazard</li> <li>• Climate change</li> </ul>					
38	Climate Change-changes in temperature, precipitation, or extreme events patterns over the project area affects the water availability, crop water requirement and peak flood (past & present context)					

Filled out by:

Signature:

Date:

**Note:**

- (1) Impacts can be positive or negative
- (2) Low Impacts refers to impact manageable by the community/contractors.
- (3) Medium Impacts involve additional support and implementation of mitigation measures.
- (4) High Impacts involve additional support and planning, full EIA, implementation and monitoring of mitigation measures and approval.

## Annex VI

### Social Checklist for Screening of Sub-project

Sub-Project Name:

Rural Municipality/Municipality:

Ward No:

District:

State No.:

Population: Male:

Female:

Total:

Screening Questions	Does the project fall in the below category				Remarks
	N or P	Low Impact	Medium Impact	High Impact	
Does the activity have human health and safety risks, during construction or later?					
2 Will the activity create the conflict among the people?					
Will the activity cause loss of livelihood?					
Are there any Important cultural or archeological sites nearby?					
Will the project require the acquisition of land (public or private, temporary or permanent) for its development?					
Will anyone be prevented from using economic resources (e.g. pasture, fishing locations, forests) to which they have had regular access?					
7 Will the project result in the involuntary resettlement of individuals or families?					
8 Might the project adversely affect communities or vulnerable people living in the area?					
9 Will the project negatively affect more than 200 PAPs?					
Are there members of community/PAPs located along/ close to project who could benefit from this project?					

#### Note:

Extent of loss is primarily in terms of the portion of land and / or structures. In order to establish extent of loss, the following category of losses is considered:

Minor impacts: Less than 10% of the total area  
 Adverse impacts: Between 10 to 25% of the total area  
 Severe impacts: More than 25% of the total area

(1) **N**= No impacts and **P** = positive impacts

(2) Low Impacts refers to impact manageable by the community/contractors.

(3) Medium Impacts involve additional support and implementation of mitigation measures.

(4) High Impacts involve additional support and planning, full EIA, implementation and monitoring of mitigation measures and approval.

Filled out by:

Signature:

Date:

## Annex VII

### Involuntary Resettlement Screening Checklist for Screening of Sub-projects

Land Acquisition/ Resettlement Issues	Yes	No	Not Known	Remarks
1. Will the subproject require acquisition of collectively owned land, state-owned land or land held by community under traditional, customary rights?				If yes, compensation at replacement cost may be required. Resettlement plan (RP)
2. Will the subproject require any temporary land occupation for the construction of facilities? - Location; Land Area; How Many Farmers' Land etc				Land leasing may be required
3. Will access to common properties (e.g. burial grounds, community facilities, public grazing lands, forest, etc) be restricted by subproject activities?				If yes, mitigation measures accepted by the affected community have to be outlined in RP.
4. Will land acquisition result in loss of individual housing and/or affect other structures?				If yes, prepare a resettlement plan (RP).
5. Will agricultural activities, income and livelihoods be negatively affected by the operation of the irrigation system?				If yes, livelihood restoration measures should be developed in the RP.
6. Are there any non-title holders whose living arrangements and/or livelihoods will be affected by the subproject?				Identify Affected People, Numbers
7. Will there be loss of agricultural plots?				(Identify Affected People)
8. Will there be losses of crops, trees, and fixed assets?				(Identify Affected People)
9. Will there be loss of businesses or enterprises?				
10. Will there be loss of incomes and livelihoods?				
11. Will any social or economic activities be affected by land use-related changes?				
12. If involuntary resettlement impacts are expected: – Are national and local laws and regulations compatible with WB's Involuntary Resettlement policy?				If there are gaps, subproject specific resettlement principles and measures need to be incorporated in the RP.
13. Are there any outstanding grievances or unpaid compensation?				
	IR Impact Category	Plan Required		
	<b>A</b> Significant Impact	RP		
	<b>B</b> Not Significant	RP		
	<b>C</b> No impact	None		

Prepared by Name and Signature:

Date:

**Annex VIII****Agricultural Checklist for Screening of Sub-projects**

Sub-Project Name:

Rural Municipality/Municipality:

Ward No:

District:

State No.:

Population: Male:

Female:

Total:

Screening Questions		Does the project fall in the below category?				Remarks
		N or P	Low Impact	Medium Impact	High Impact	
1.	Will the proposed subproject involve the application of pesticides that have a known negative effect on the environment or human health?					
2.	Will the proposed subproject involve the application of chemical fertilizers that have a known negative effect on the soil environment or health?					
3.	Does the scheme under the subproject will generate any waste?					
4.	Is there any waste management plan for the scheme if it generates waste? (please include the waste management plan)					
5.	Will the proposed subproject result in increased health risks as a result of air and dust pollution in the subproject area?					

**Negative List**

- Any sub-project activity that involves the procurement and/or use of pesticides categorized as Class Ia, Ib and II as per WHO classification (Available list of enlisted and registered pesticides by Department of Agriculture is given in Annex -) to be added later
- Any sub-project activity that involves the procurement and/or use of pesticides that has not been authorized in accordance with the Pesticides Act of the Government of Nepal.

**Note:**(1) **N**= No impacts and **P** = positive impacts

(2) Low Impacts refers to impact manageable by the community/contractors.

(3) Medium Impacts involve additional support and implementation of mitigation measures.

(4) High Impacts involve additional support and planning, full EIA, implementation and monitoring of mitigation measures and approval.

Filled out by:

Signature:

Date: