མཐའ་འཁོར་གནས་སྐྱངས་དང་མི་སྡེའི་འཛིན་སྐྱོང་གི་གཞི་བཀོད།

བསྡུད་དོན།

ཞང་གནས་ཅན་གྱི་མཐུད་འབྲེལ་དང་ ཞབས་ཏོགས་ལས་འགུལ་འདི་ སྤྱིར་གཏང་ ལུང་སྡོགས་མཐུད་འབྲེལ་ལས་འགུལ་གྱི་ ཆ་ཤས་ཅིག་ཙམ། ཆ་ཤས་དེའི་ཟད་འགྲོ་ཡང་ ཡུ་ཙེའི་ང་ལང་ ས་ཡ་ ༢༩.༥ གནས་ནི་ཙེནམ་དང་ དེའི་གཞི་བརྟུགས་ལས་སྡེ་འདི་ བརྡ་དོན་དང་བརྒྱུད་འབྲེལ་ལྷན་ཁག(MoIC)འོག་ལུ་ཡོད་པའི་ བརྡ་དོན་འཕྲུལ་རིག་དང་བརྒྱུད་འཛིན་ལས་ཁུངས་ (DITT) འདི་ཙེན།

གོང་འཁོད་ལུ་ ཨན་ཚུན་འབྲེལ་བའི་ཡན་ལག་ཆ་ཤས་ གཉིས་ཡོད་ དེ་ཡང ་

ཀ) བརྟན་ཏོག་ཏོ་དང་ཟད་འགོ་འཛམ་པ་ དེ་ལས་ ཉེན་ཁཀ་ཆུང་བའི་ལུང་སྡོགས་གློག་རིག་རིག་ཡོངས་འབྲེལ་(བོར་ཏ་བེན་ཇ)་ མཐུད་འབྲེལ་གནས་པའི་

༡) རྒྱལ་སྤྱི་མཐུད་འབྲེལ་འཛུལ་སྐོ་ཅིག་ རྒྱལ་ཁབ་ཀྱི་ཤར་སྡོགས་ལུང་པ་ལུ་ གཞི་གཙུགས་འབད་ནི།

༢) འབྲུག་རྒྱལ་ཁབ་དང་རྒྱ་གར་རྒྱལ་ཁབ་ དེ་ལས་ བང་ལ་ཏྲེཤ་རྒྱལ་ཁབ་ཀྱི་བར་ནང་ མཐུད་འབྲེལ་གཞི་གཙུགས་འབད་ནི།

༣) ཕའི་བར་ཡོངས་འབྲེལ་བརྟག་ཆས་དང་ མཁོ་མེད་འབྲེལ་ལམ་གཞི་གཙུགས་འབད་དེ་ རྒྱལ་ཁབ་ནང་ ཡོངས་འབྲེལ་ཉེན་སྐྱང་ སྤྲིང་སྤྲིང་བཟོ་ནའི་རིམ་སྤྲིག་ཚུ་ཡང་ཡོད།

ཁ) རིག་རྩལ་ཡར་འཕར་དང་ མཐུན་མོང་གི་ གནས་སྟུད་གཞི་རྟེན་ལྟེ་བའི་འོག་ལུ ་

༡) གློག་རིག་སློབ་ཕྲུག་ཚུའི་རིག་རྩལ་རྒྱུ་སྐྱིད་གཏང་ན། ༢) ན་གཞོན་ཚུ་ལུ་ སྐྱོང་བརྡར་སྤྱིན་ཏེ་ ཡོངས་འབྲེལ་ཐོག་ལུ་འབད་ཚུགས་བཟོ་ནི། ༣) གཞུང་གི་ཡོས་ཚུ་ འཛོན་དགས་ལྷན་པའི་ཕྱག་ལུ་གནང་ཚུགས་ནི་དེ་དོན་ལུ་ རིག་རྩལ་ཡར་འཕར་གྱི་ སྐྱོང་བརྡར་སྤྱིན་ནི་ དེ་ལས་ ༤) ཡོང་འབྲེལ་ཉེན་སྐྱངལུ་འཛོན་དགས་བཟོ་ནི་གྱི་རྒྱབ་སྐྱོར་ཚུ་སྤྱིན་ནི།

མཐའ་འཁོར་གནས་སྐྱངས་དང་མི་སྡེའི་འཛིན་སྐྱོང་གཞི་བཀོད་འདི་གིས་ ལས་འགུལ་ས་ཁོངས་རེ་བཞིན་ལུ་ སྤྲིང་གཏང་གི་ལམ་སྟོན་དང་ ཞི་འཇམ་ཚད་གཞི་ དེ་ལས་ མཐའ་འཁོར་དང་སྤྲི་སྡེའི་གནད་དོན་ཚུ་འཛིན་སྐྱོང་འཐབ་ཐངས་ཀྱི་

འགྲོ་ལུགས་ཚུ་ཡངས་བྱེན་མ་ཨིན། ལས་འགུལ་འདི་ འབྲུག་རྒྱལ་ཁབ་ཡོངས་རྫོགས་ནང་གཞི་བཙུགས་འབད་ནི་ཨིན། མཐུད་འབྲེལ་ཆ་འཕྲལ་འདི་ རྒྱལ་སྤྱི་འཛུལ་སྐྲ་བཙུགས་ཡོད་པའི་ས་གནས་ བསམ་སྒྲུབ་ལྟོང་ཁར་རྫོང་ཁག་གི་ ལྷོ་ཨར་ཁྲོམ་སྡེ་ ཚུ་ནང་གཞི་བཙུགས་འབད་ནི་ཨིན། ནང་འཁོད་ཐའི་བར་ཙོཔ་ཏེགཱ་གི་མཐུད་ལམ་འདི་ དཔང་འདུས་ཞོ་བྱང་དང་ཀྱོན་གསར་ བྱང་ཐང་དང་ལྷུན་རྩེ་ རྡུ་དང་བསམ་རྩེ་ དེ་ལས་དར་དཀར་ནང་ལས་ལྷ་མོ་འཛིན་ཁ་ཚུན་བཙོ་ནི་ཨིན།

རྒྱལ་སྤྱི་འཛུལ་སྐྲ་དང་ ནང་འཁོད་ཀྱི་མཁོ་མེད་ཐའི་བར་མཐུད་ལམ་གཞི་བཙུགས་འབད་བའི་སྐབས་ མི་སྡེ་དང་རང་བཞིན་གནས་སྐྱབས་ལུ་ གཞོན་པ་མི་འབྱུང་ཟེར་སྐྱབ་མི་ཤེས་རྟུང་ གཞི་བཙུགས་འདི་གིས་ ལས་འགུལ་ས་ཁོངས་ནང་ཚུད་པའི་ མཐའ་འཁོར་དང་མི་སྡེ་ཚུ་ལུ་ ཐན་གཞོན་དུམ་དག་རེ་འབྱུང་སྲིད། རྒྱ་སྤྱི་དངུལ་ཁང་གི་ཉེན་སྐྱོང་སྲིད་བྱེས OP 4.01 དང་འཁྲིལ་ཏེ་ སྤྱིར་གཏང་ལས་འགུལ་འདི་ དབྱེ་ཁག་ལས་ཚན་ “ཁ” མཐའ་འཁོར་གནས་སྐྱབས་དབྱེ་ཞིབ་གི་འོག་ལུ་ དབྱེ་སྟེ་ཡོད།

དཔྱོད་གནས་སྐབས་ལུ་ རྒྱ་གར་རྒྱལ་ཁབ་དང་བང་ལ་ཏེཤ་རྒྱལ་ཁབ་གཉིས་དང་གཅིག་ཁང་ མཐུད་འབྲེལ་གྱི་ལུ་ཚུ་ ཡང་དག་པ་སྤྲེ་མེད་པ་དང་ ཐའི་བར་ཙོཔ་དེགཱ་གི་གློག་ཐག་འཐེན་སའི་ལམ་ཡང་མ་ཤེས་པར་ཡོད། དེ་སྤྲེ་ནི་འདི་གིས་ གནོད་དག་རེ་འབྱུང་སྲིད་ནི་ཨིན་པའི་ མི་སྡེ་ཚུ་ དཔྱོ་ཚད་འཛིན་འབད་མི་ཚུགས་ནི་ཨིན་པས། མཐའ་འཁོར་གནས་སྐྱབས་དང་མི་སྡེའི་འཛིན་སྐྱོང་གཞི་བཀོད་ནང་ རྒྱལ་སྤྱི་དངུལ་ཁང་གི་ཉེན་སྐྱོང་སྲིད་བྱེས OP 4.01 དང་འཁྲིལ་ གཞི་ས་གནས་སྲིད་བྱེས OP 4.01 དང་འཁྲིལ་ གཞི་ས་གནས་ཀྱི་གཞི་བཀོད་(RPF) དང་ གཡུས་ཁའི་མི་སེར་ཚུ་གི་དོན་ལུ་འཆར་གཞི་གཞི་བཀོད་(T/IPPF) ཚུ་ཡང་ཚུད་དེ་ཡོད། ཡོངས་འབྲེལ་མཐུད་ལམ་གྱོས་འཆར་གྱིས་ རྒྱལ་སྤྱི་དངུལ་ཁང་གི་ཉེན་སྐྱོང་དང་ རྒྱལ་ཡོངས་མཐའ་འཁོར་གནས་སྐྱབས་ལྷན་ཚོགས་ཀྱི་སྲིད་བྱེས་དང་འཁྲིལ་ འགན་འཁྲི་འབྲེལ་གཅོད་ཡོན་ན་ དེས་བཅེན་བཙོ་ནའི་དོན་ལུ་ མཐའ་འཁོར་གནས་སྐྱབས་དང་ མི་སྡེའི་འཛིན་སྐྱོང་གཞི་བཀོད་(ESMF) འདི་བཙོ་ཡོད་པ་ཨིན། རྒྱལ་ཁབ་ཀྱི་རྩ་བཅེན་ཡོངས་འབྲེལ་འདི་ རྒྱ་གར་རྒྱལ་ཁབ་ལས་ བརྒྱུད་དེ་ བང་ལ་ཏེཤ་གི་ཀོཁས་བ་ཟངས་ལས་ ཡོངས་འབྲེལ་བེན་ཕེཔ་བཀྲག་ཞིབ་འབད་དེ་ ཡར་དྲག་བཙོ་ནི་ཨིན་མ་ལས་ རྒྱལ་ཁབ་འདི་ཚུ་གི་ འབྲེལ་ཡོད་རྒྱལ་ཡོངས་ཁྲིམས་དང་སྲིད་སྐྱོས་ཚུ་ཡང་ མཐའ་འཁོར་གནས་སྐྱབས་དང་ མི་སྡེའི་འཛིན་སྐྱོང་གཞི་བཀོད་(ESMF) ནང་ཚུད་དེ་ཡོད།

རང་བཞིན་གནས་སྐྱབས་དང་མི་སྡེ་ལུ་ གཞོན་ཉེན་སྐྱོས་མི་འབྱུང་ནིའི་དོན་ལུ་ མི་སྡེའི་འཛིན་སྐྱོང་གཞི་བཀོད་(ESMF) གིས་ འཆར་གཞི་རྒྱས་བཤད་དང་ལམ་སྟོན་ཚུ་བཤམ་འཁོད་ལྟར་ཡོད།

- མཐའ་འཁོར་གནས་སྐྱབས་དང་སྤྱི་སྡེའི་གདམ་ཟེམ།
- གློས་འཆར་བརྩམ་ཡོད་པའི་ལས་འགུལ་འདི་གིས་ རང་བཞིན་གནས་སྐྱབས་དང་ ས་ཁོངས་ལགཔ་ལེན་གྱི་དུས་ཡུན་དེ་ལས་འཆོ་ཐབས་དང་འོང་འབབ་ཚུ་ལུ་ འོས་འབབ་ལྟན་པའི་ཕན་གནོད་ངོས་འཛིན་དང་དབྱེ་ཞིབ་འབད་ནི་ལུ་ ལམ་སྟོན་བྱེད་ནི།
- རང་བཞིན་གནས་སྐྱབས་ལུ་གནོད་པ་མའ་ཐབ་རྐྱབ་ནི་དང་སྤྱི་སྡེ་ལུ་ཕན་གནོད་ རེ་ལས་ ཁྱད་ཕན་ཡར་སེང་རྐྱབ་ནི་ཚུ་གི་ བྱ་རིམ་དང་རྩ་དོན་ཉིད་ས་བཀོད་དེ་ཡོད།
- འོས་འབབ་ལྟན་པའི་ལུ་འགན་གསལ་བཀོད་འབད་ནི་དང་ རང་བཞིན་གནས་སྐྱབས་དང་ སྤྱི་སྡེ་ལུ་རྐྱེན་ངན་འཛིན་སྐྱོང་གི་ལུ་དང་འབྲེལ་བ་ཡོད་པའི་མི་ངོམ་གི་འགན་ཁུར་ རེ་ལས་ དེས་པར་མཁོ་བའི་ཉན་ཞུ་བརྩུལ་བསྟུལ་ཐུག་པའི་ བྱ་སྤྱོའི་རིམ་པ་ཚུའི་ལམ་སྟོན་ཡང་བྱེད་མ་ཚུགས།
- གཞིས་གསར་བྱ་ལེན་འཆར་གཞི་(RAP) དང་ ཚོང་ཐུང་གཞིས་གསར་བྱ་ལེན་འཆར་གཞི་(ARAP) ལུ་ལམ་སྟོན་བྱེད་ནི།
- རྒྱུད་འཐུས་དང་ཐོབ་དབང་ལམ་ལུགས།
- སྤྱི་སྡེ་ཕན་གནོད་དཔྱད་ཞིབ་(SIA) འབད་ནི་ལུ་ལམ་སྟོན་བྱེད་ནི།
- གཡུས་ཁའི་མི་སེར་ཚུ་གི་དོན་ལུ་འཆར་གཞི་(I/TPP)བཟོ་བའི་སྐབས་ ལམ་སྟོན་བྱེད་ནི།
- ཁག་འབགས་ཚུ་གིས་ དམིགས་སེལ་ མཐའ་འཁོར་གནས་སྐྱབས་དང་མི་སྡེའི་འཛིན་སྐྱོང་གི་གཞི་བཀོད་(ESSA) འབད་བའི་སྐབས་ ལམ་སྟོན་བྱེད་ནི།

མཐའ་འཁོར་གནས་སྐྱབས་དང་མི་སྡེའི་འཛིན་སྐྱོང་གི་གཞི་བཀོད་(ESSA) དང་འཁྲིལ་ དེས་པར་མཁོ་བའི་ རང་བཞིན་གནས་སྐྱབས་དང་མི་སྡེ་ནང་ ཕན་གནོད་ཀྱི་དབྱེ་ཞིབ་ དེ་ལས་ གདམ་སེལ་དང་དཔྱད་ཞིབ་ཚུ་འབད་ནིའི་དོན་ལུ་ གློས་སྟོན་པ་ཅིག་ ཀླ་ཁར་ལེན་ནི་ཨིན།

ལས་འགུལ་འདི་ རྒྱལ་སྤྱི་དངུལ་ཁང་གིས་ གནང་བ་མ་གནང་བའི་ཉེ་མ་ མཐའ་འཁོར་གནས་སྐྱབས་དང་མི་སྡེའི་འཛིན་སྐྱོང་གི་ གཞི་བཀོད་(ESMF)འདི་ བརྡ་དོན་དང་བརྒྱུད་འབྲེལ་ལྟན་ཁག་(MoIC) དང་ བརྡ་དོན་འཕྲུལ་རིག་དང་བརྒྱུད་འཕེལ་ལས་ཁུངས་(DITT) གི་ཡོངས་འབྲེལ་འཆར་སྐོར་ནང་ གསལ་སྟོན་འབད་ནི་ཨིན།

Royal Government of Bhutan

Regional Connectivity Project
Digital Connectivity Component

Environmental and Social Management Framework (ESMF)

Department of Information Technology and Telecommunications (DITT)

Ministry of Information and Communications (MOIC)

July 28, 2016

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PART ONE: ESMF (BHUTAN)

INTRODUCTION

Project Objective

The Project Development Objective is to reduce international trade logistics costs, and improve reliability and lower the cost of international broadband connectivity in Bhutan through investments in core trade and ICT infrastructure and related systems.

Project Context

Limited regional broadband connectivity is currently hampering the development of ICT-enabled regional services, including efficient cross-border trade. There is already a trade of ICT-enabled services (e.g., Business Process Outsourcing, e-commerce) between Bhutan, Bangladesh and India. Increasing demand on servicing trade among these three countries calls for expanded capacity of cross-border telecom connectivity and improved availability through redundancy of connection channels. An example of the increasing need for expanding the access to affordable, reliable, and secure broadband connectivity can be found in existing IT companies in Thimphu IT Park that currently face important constraints of high price and lack of redundancy of international broadband connectivity. Moreover, Cybersecurity in Bhutan becomes a key concern of India and Bangladesh to expand and enhance regional ICT-enabled services. Broadband connections among all these countries enable using ICT-based systems for data sharing and processing of cross-border trade transactions, but this has to be complemented with robust cybersecurity infrastructure, policies, protocols, and human resources. All South Asian countries have implemented a Computer Incidence Response Team (CIRT), which is a foundation for implementing cyber security initiatives. Regional cooperation on CIRT within South Asian countries is key to strengthen national cyber security programs and in turn helps in facilitating trade of goods and services. Strengthening Bhutan's Cybersecurity assets with a CIRT and cooperation amongst Bhutan, India, and Bangladesh with a Cybersecurity framework for regional cooperation will enable secure regional trade integration. Similarly, a regional approach is needed to overcome limited capacity of R&D infrastructure as well as to have access to innovative ICT suppliers. There is low innovation in the Region - firm level of technology absorption- Bangladesh ranked 109, Bhutan 103, and India 71 out of 147 countries.[1] By increasing ICT absorption in more traditional regional sectors, they will be able to innovate to better compete beyond price.

Linked to Bhutan's landlocked status, international telecommunications connectivity is a challenge for the country from a reliability and affordability point of view. The distance between Bhutan's

[1] Firm level technology absorption indicator of the Global Competitiveness Report 2014-2015 Ranking

borders and the coastal landing stations of the submarine cables presents a significant challenge for operators and Internet Service Providers (ISPs) attempting to access low-cost bandwidth. Bhutan currently relies on international telecommunications connectivity through two gateways - Phuentsholing-Siliguri and Gelephu-Bongaigaon - both of which have a single point of potential failure at the narrow Siliguri Corridor (or Chicken's Neck). The price of international broadband services in Bhutan is nearly ten times that of India and double that of Nepal, and represents a key deterrent to improved digital connectivity, digitally enabled trade in both goods and services, private sector development and job creation.

Future trade development and economic growth will increasingly depend on digital connectivity to compliment physical connectivity; particularly in landlocked countries such as Bhutan. As road infrastructure is developed, opportunities can be exploited to share transport and broadband infrastructure (e.g., ducts and optical fiber). Such connectivity adds to the existing broadband backbone networks while also helping to facilitate the automation of border management and the development of the industrial parks along the border. The Government has taken up a number of initiatives to improve the Information and Communication Technologies (ICT) sector. These include the establishment of a Technology Park in Thimphu; provision of rental and training subsidies for youth to be employed in the ICT sector; and using its Universal Service Fund to finance the expansion of fiber backbone networks domestically along power transmission networks.

However, despite telecommunications services being available in almost all villages in Bhutan, Internet services penetration is lower than in the rest of the South Asia Region, partly because of higher prices. As noted, the price of international connectivity in Bhutan is high compared to its neighbors, which is in part due to Bhutan’s limited options for international connectivity given the lack of route redundancy. Exploring a redundant international route connecting to the submarine cable landing station in Cox's Bazaar, in Bangladesh, may therefore help reduce the cost and improve reliability for broadband connectivity. India’s North Eastern states faced similar redundancy challenges as their broadband connectivity also depends heavily on transit through the Siliguri Corridor. Government-owned Indian telecom operator, Bharat Sanchar Nigam Limited (BSNL), has already established international connectivity to India’s North Eastern states via Cox’s Bazaar, Bangladesh. Similarly, establishing new international connections through Bangladesh would strengthen redundancy of the overall network and provide greater competition between alternative transit/access routes for international connectivity – benefitting both Bhutan and India’s North Eastern states by increasing transit traffic through Bangladesh – incentivizing further infrastructure development and driving down unit costs of investment and services. BSNL’s experience of setting this international connectivity will benefit in establishing redundant connectivity to Bhutan and, in addition, India’s North Eastern states will have extra redundant international connectivity due to the additional Bhutan connectivity. This connectivity may also be used to provide link between Bhutan and Cox’s Bazaar. Bhutan has been negotiating with Bangladesh for this redundant connectivity during the last three years. To get the full benefits of regional broadband connectivity, the existing optical fiber system on the Bhutan side will also have to be strengthened by completing missing loops

and also by installing an optical fiber monitoring system. Bangladesh is well-connected to the international telecommunications highway that serves Asia, the Middle East, and Europe: two international submarine cables (SeaMeWe-4 and SeaMeWe-5) land in Bangladesh, connecting it to about 15 countries each. However, it is ensured from the DITT that there is no civil work involved in Bangladeshi side.

Digital Connectivity and Services Component (Total Cost: US$ 24M, IDA: US$ 22M)

This component will strengthen Bhutan's secure, reliable and affordable digital connectivity and services provision to the region. Reliable, affordable, and secure broadband connectivity is a key enabler for regional trade integration. Data communication through enhanced regional telecom connectivity among Bhutan, Bangladesh and India and application of ICT-based systems will help in improving efficiency and in reducing the customs clearance time of the dry port proposed under the Project. While investment activities under this Component will be undertaken mostly on Bhutanese soil, all activities will benefit the South Asian region: a) the regional broadband infrastructure network will become stronger by building additional interconnection points at the Bhutan-India border, and strengthening the connection to Bangladesh's submarine cable landing station at Cox's Bazaar. Broadband networks are stronger, more resilient and reliable when they have more interconnection points. Having more points in the network allows for rapid rerouting of traffic when there is a technical failure in a particular area, for instance, due to a natural disaster. This means that regional efforts to build up the broadband infrastructure anywhere in South Asia have strong positive spillover effects in other countries of the region; b) small countries in the region can achieve enough scale on their own to become a global player in ICT-based services, since they do not have a critical mass of qualified people to work in applying ICT to other industries; however, by acting as a region and building a joint pool of qualified human resources, the region can position itself as an attractive global player for the industry; c) the Project will support the development of ICT-based services to innovate and modernize other sectors through ICT by focusing these efforts on traditional regional industries, as opposed to on purely local industries, not only does Bhutan ensure a larger demand for the solutions created, but it also has positive spillover effects in the other countries; d) by participating in joint institutional capacity building and coordination of policies, Bhutan will help regional integration efforts. The Project will leverage existing regional institutions such as the South Asian Association for Regional Cooperation (SAARC) Telecom Forum or the South Asia Telecom Regulatory Council (SATRC) to harmonize the region's ICT regulatory framework.

This component will support the following sub-components:

1) **Reliable, Affordable and Secure Regional Broadband Connectivity**. This sub-component will support digital regional connectivity by increasing the reliability, affordability and security of international broadband connectivity. This subcomponent will establish an alternate international route for Bhutan, North East India and Bangladesh to reach a submarine cable landing station. It will leverage existing fiber network infrastructure in India

and Bangladesh, where possible, while also addressing missing links to optimize the robustness and efficiency of the network, including providing new routes for access to international connectivity and strengthening broadband services at strategic trade sites/infrastructure (e.g., dry port). Thus, besides improving the regional connectivity between Bhutan, India and Bangladesh, the Project will also improve the reliability of domestic connectivity within Bhutan, and buy long term international bandwidth. Such an approach has been proven successful in various regional telecom projects in Africa, like the Regional Communications Infrastructure Programs (RCIPs), which have long term bandwidth purchase as part of regional IDA components. Links developed under the Project will be operated on non-discriminatory, open access terms, enabling other providers to use the same infrastructure under reasonable commercial and technical conditions, thus increasing competition and driving down costs. The wholesale purchase of international communications capacity is also strongly regional in nature since the capacity purchased is carried on regional networks and via submarine cables. This provides direct benefits to the end-users, supports the financial viability of the infrastructure and is channeled through regional operators, thereby supporting the development of the ICT sector.

Furthermore, strengthening existing cyber security arrangement in the country will help in making this regional connectivity more secure, which is necessary to modernize and promote regional trade and also in attracting private sector investment in Bhutan and the region. Thus, this sub-component will support the Cyber Incidence Response Team to build its forensic and incidence response capabilities and to protect critical information infrastructure. Furthermore, it will develop a Cybersecurity framework for regional cooperation in views towards regional harmonization of Cybersecurity policies to enable secure digital trade within the region. By doing so, the Project supports the harmonization of Cybersecurity and ICT policy frameworks consistent with international best practices. With affordable, reliable and secure regional telecom connectivity between Bhutan, India, and Bangladesh, this this harmonization of Cybersecurity policy frameworks is becoming increasingly important as broadband networks and services (e.g., mobile roaming), digital services (e.g., eTrade), and businesses models (e.g., crowdfunding) cross borders, as countries become increasingly integrated through bodies such as the South Asian Association for Regional Cooperation (SAARC) or the South Asian Telecommunications Regulators' Council. Thus, with affordable, reliable and secure regional telecom connectivity between Bhutan, India, and Bangladesh, and leveraging the convening power of regional institutions, the Project will contribute to harmonization of the regional ICT regulatory environment, which can result in eliminating or significantly reducing mobile roaming charges, or establishing coordination protocols to share information on cyber-attacks and cybersecurity measures. It is worth highlighting that the benefits of the broadband connectivity and the Cybersecurity program will cut across the boundary lines of Bhutan, because India and Bangladesh will also get the benefit of international broadband links redundancy and sharing Cybersecurity information. The subcomponent will finance: (i) an international gateway in Eastern Bhutan, (ii) the establishment of end to end Internet

connectivity between Bhutan, India and Bangladesh, including closing critical missing links or adding redundant links in the national network, and purchase of wholesale Internet bandwidth; (iii) the development of the fiber network monitoring system; and (iv) investments to strengthen regional ICT (e.g., roaming regulation) and cybersecurity enabling environment.

2) **Skills Development and common central database**. This sub-component will increase the competitiveness of the region's ICT sector, by increasing the quantity and quality of ICT skills. Support will include: (i) enhancing skills for computer science and IT college students to ensure that they are industry ready when they graduate; (ii) skills development for unemployed IT and computer science graduates; (iii) training of youth to become online outsourcers; (iv) training for Government officers in middle management, including the development of IT skills to support their Chief Information Officer/ IT Parenting role; and (iv) cybersecurity capacity building. Skills development trainings will be structured through a mix of in person and online courses, and will seek to leverage regional initiatives, events, and institutions such as the SAARC Telecom Forum and the South Asia Telecom Regulatory Council, which share these goals[2]. Support will be provided to establish the Common Data Hub which will be sourced by several sector public authorities, prioritizing those with strongest willingness to develop electronic services such as the National Trade Information Portal, supported by the Government Data/Information Asset. Support will also be provided for the implementation of a program on innovation in public service delivery where ICT will be leveraged to develop low-cost applications for service delivery and could have synergies with the Government to Citizen Program. This program will utilize the Common Data Hub and will provide opportunities for the utilization of skilled resources trained under the Project. Developing the Common Data Hub will also help in automation of public service delivery using ICT platforms.

Expected Project Impact

Improved digital connectivity will support the Government's plan to develop a regional data center hub and to increase reliable, secure and affordable broadband Internet services – facilitating regional and international trade in both goods and services and supporting support private sector development and job creation. The global market for ICT services exceeds US$ 1.7 trillion (Gartner), opening the opportunity for countries to participate as global stakeholders and to diversify their exports. One of the benefits of participating in this market is the rapid labor inclusion, especially for young people.

[2] These institutions main objectives are, respectively: (i) to "promote the welfare of the peoples of South Asia, strengthen collective self-reliance, promote active collaboration and mutual assistance in various fields, and cooperate with international and regional organizations" ; and (ii) to "discuss and coordinate all the issues relating to regulations in telecommunication and ICT which are of common interest to the telecommunication regulators in South Asian countries" "and facilitate the exchange of information in these areas through activities such as seminars, training and workshop". Source: South Asia Telecom Regulatory Council ; available at: http://www.apt.int/APTSATRC

Bhutan sees this opportunity and wants to invest in the broadband infrastructure and skilled human resources that the sector needs to bloom as a tool to fight against extreme poverty and youth unemployment, while enabling exports diversification and productivity gains. In this regard, the findings of the 2016 *World Development Report: Digital Dividends* are illustrative. It finds that the Internet enables more products to be exported to more markets, often by newer and younger firms. A 10 percent increase in Internet use in the exporting country is found to increase the number of products traded between two countries by 0.4 percent. A similar increase in Internet use of a country pair increases the average bilateral trade value per product by 0.6 percent. The Internet also reduces transaction costs, allowing firms to enter new markets, enhance their efficiency, and exploit economies of scale, leading to innovation. This results are achieved by reducing information frictions, search costs, and the costs to communicate. The decline in transaction costs can be dramatic if firms adapt their business models to automate data-intensive transactions, generating economies of scale. The reduction in transaction costs thus increases inclusion (market access), efficiency, and scale, which translate into economic growth primarily through the three channels of trade, capital utilization, and competition.

Project Implementation Areas

The overall project investments will be implemented in throughout Bhutan. The connectivity components will be implemented in the South Eastern town of Samdrupjongkhar, where the third international gateway will be established. Domestic fiber optic links will be developed between Wandguephodrang and Trongsa; Bumthang and Lhuentse; Haa and Samtse; and from Dagana to Lhamoizingkha. No land acquisition will take place as the international gateway will be built in the existing premises of either Bhutan Telecom, Bhutan Power Corporation (BPC) or Tashi Infocomm Limited. All fiber optic links will be laid alongside the existing transmission networks that belong to BPC and for which transmission towers have already been built by BPC. This component of the project will not trigger WB OP 4.12 Involuntary Resettlement (although the same is triggered for Component A of the project – Pasakha Dry Port). No land acquisition, displacement (physical or economic) of people (with or without formal title) and/or any adverse livelihood impacts, whether temporary or permanent, is expected and/or permissible under this component of the project. No indigenous People live in the above-mentioned areas and hence WB OP 4.10 Indigenous People is not triggered for the project.

Any civil works will be minor, with only minor renovation of the existing equipment rooms in Samdrupjongkhar expected. The telecommunications transmission networks between India and Bhutan; and Bangladesh and Bhutan already exist. A number of companies, including Power Grid Corporation of India, Railtel, Bharat Sanchar Nigam Limited, Airtel, Tata Teleservices, and Reliance Communications own and operate networks in India. Bangladesh Telecommunications Corporation Limited (BTCL), Power Grid Corporation of Bangladesh Limited, Summit Telecommunications are

some of the Bangladesh providers who already own and operate networks in Bangladesh. Thus, Bhutan will utilize these existing networks to carry international Internet bandwidth into Bhutan.

Objective and Outline of the Environmental and Social Management Framework

The objective of this ESMF is to ensure that the implementation of the project is carried out in an environmentally and socially sustainable manner. The ESMF aims to provide clear guidance and mitigation measures, so as to avoid, manage or minimize potentially negative environmental and social impacts associated with project activities, specifically to:

- Identify and assess the potential impact of the proposed Project on environment, land tenure and use, livelihood and income;
- Clarify concrete steps and clear principles to mitigate negative environmental and social impacts, and enhance positive benefits;
- Specify appropriate roles and responsibilities of concerned entities in charge of environmental and social risk management, and outline the necessary reporting procedures, and
- Establish clear directives and methodologies for the environmental and social screening of the connectivity subcomponents to be financed under Component 3 of the project. This ESMF will form a part of the bidding documents under the ICT connectivity subcomponent of the project.

The proposed project component does not envisage significant and irreversible adverse impacts on the environment and community. The identified adverse impacts are localized in spatial extent and short in duration and are manageable by implementing mitigation measures detailed in the ESMF.

This Environment and Social Management Framework was developed as a standalone document to meet WB's safeguard requirements consistent with the issues identified during project preparation. It also includes the Environmental Codes of Practice (ECOP). This ESMF and the ECOPs will form a part of all bidding documents issued under the ICT regional subcomponent of Component 3 of the project.

PROJECT LEGAL AND POLICY FRAMEWORK

National Legislation and Regulations

Environment

The National Environment Protection Act became effective in 2007 and the National Environment Commission has established regulations for the Environment Clearance of Projects in 2002 which puts in place the Environmental Impact Assessment requirements for Bhutan. The Royal Government of Bhutan has a strong legal framework for the protection of Bhutan's environment as it is a key

Government main priority to mainstream sustainable environmental considerations into national development planning and to develop an effective safeguards system to prevent the social and environmental impacts associated with economic growth.

Land Laws

Bhutan's Land Act of 2007 and the related rules and regulations, including the Land Rules and Regulations of 2007, Land Lease Rules and Regulations provide a comprehensive legal framework for land ownership, transactions, use and acquisition. It provides the framework for land compensation and replacement when land is acquired for public use. When private land is acquired or private assets such as trees and standing crops are lost under public or private projects, compensation is paid at market value. The Act also provides that affected people with complaints can bring the case to court.

Telecommunications

The Bhutan Information Communications and Media Act effective in 2006 and governs the ICT sector.

Existing rules and regulations from BEA (Bhutan Electricity Authority) and BICMA (Bhutan InfoComm & Media Authority) and any other relevant rules will be strictly complied. During implementation the environmental would be strictly in compliance with requirements of NEC (National Environment Commission)

The project may need to be evaluated for applicability of all National, State Laws, Rules and Regulations of India. Environmental legislations may applicable for the project are (i) Environmental Protection Act, 1986(ii) Forest Conservation Act, 1980 (iii) Wildlife Life Protection Act, 1972 (iv) Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016 (ix) Other waste management & safety rules, regulations and guidelines. EIA has now been made mandatory under the Environmental (Protection Act, 1986 for 29 categories of developmental activities involving investments of Rs. 50 crores and above.

Bangladesh Environment Conservation Rules (ECR) has classified the projects into four categories based on their site conditions and the impacts on the environment; (a) Green, (b) Orange A, (c) Orange B and (d) Red. Various industries and projects falling under each category have been listed in schedule 1 of ECR 1997. According to the Rules, Environmental Clearance Certificate is issued to all existing and proposed industrial units and projects, falling in the Green Category without undergoing EIA. However, for category Orange A and B and for Red projects, require location clearance certificate and followed by issuing of Environmental Clearance upon the satisfactory submission of the required documents. Green listed industries are considered relatively pollution-free, and therefore do not require site clearance from the DoE. On the other hand, Red listed industries are those that can cause 'significant adverse' environmental impacts and are, therefore, required to submit an EIA report. These industrial projects may obtain an initial Site Clearance on the basis of an IEE based on the

DoE's prescribed format, and subsequently submit an EIA report for obtaining Environmental Clearance.

Applicable World Bank Safeguard Policies

In accordance with the World Bank's safeguard policies and procedures (OP/BP 4.01), the overall proposed Project is considered Environmental Assessment (EA) category "B" partial assessment due to anticipated, well known, low risks associated with the type of physical infrastructure proposed under Component 3 of this project. The implementation of Component 3 is expected to create very limited negative impacts on local environment and communities during the construction phase in the project location and thus, it triggers the World Bank (WB) safeguard policies on Environmental Assessment (OP 4.01). However, the Environmental, Health, and Safety (EHS) Guidelines of the World Bank Group along with the EHS for Telecommunication projects is applicable to the project. The potential application of these safeguards will be screened again during project implementation, prior to the installation of the networks.

OP 4.01 on *Environmental Assessment* is triggered for this project since Component 3 may entail limited small scale civil works related to the renovation of existing Bhutan Telecom and BPC infrastructure. Potential but temporary negative impacts on local environment and communities will mainly occur during the construction phase of this Project; the nature of the proposed construction works although at different sites will include similar activities, with an extent of impacts during construction that can be readily and consistently assessed and mitigated. The selection of sites will be screened for environmental and social criteria based on an Environmental and Social Screening Form (Annex 1). To mitigate the potential negative impacts during construction, Environmental Codes of Practices (ECOPs) (Annex 2) will outline requirements for mitigation measures and monitoring aspects to be carried out during construction and operation and maintenance. This Environmental and Social Screening Form, will be incorporated in the bidding documents for all works financed under this Project.

OP 4.04 on Natural Habitats : No screening procedures are required as (i) no towers are being installed in critical or non-critical natural habitat and (ii) no conversion or degradation of any critical natural habitat will take place. It is envisaged during feasibility studies that there are no natural habitat in the project area and its area of influence. Hence, OP 4.04 is not triggered . The project activities shall not have any impact on the natural habitat and It is highly unlikely that any natural habitat formed largely by native plant and animal species will be affected or modified due to the project activities

The component will fund both civil works on the Bhutan side and in Bangladesh and India.
On the Bhutan side no indigenous people (IPs) are expected. No land acquisition or displacement of people, adverse impacts on people and/or livelihoods (temporary or permanent) is anticipated. OP 4.10 and OP 4.12 are not expected to be triggered for the Bhutan side. Any impacts on IPs and all

land and resettlement related impacts mentioned above have been put on an exclusion list for Package 1 (activities on the Bhutan side). The ESMF which has been prepared is relevant for Package 1 and all activities to be carried out on the Bhutan side. The activities to be carried out on the Bangladesh and India side (Package 2) are not well defined at this stage. The route for fiber optic cables too are far from known. The ESMF will be expanded to include a Resettlement Policy Framework (RPF) and a Tribal[3]/Indigenous Peoples Planning Framework (T/IPPF) as the possibility of small scale impacts on people and impacts on IPs/Tribal people cannot be completely ruled out at this stage. Thus OP 4.12 and OP 4.10 will be triggered for the component due to possible future impacts under Package 2 of Component C. The ISDS will be revised accordingly.

OP4.11 on Physical Cultural Resources is not triggered given that the existing transmission networks are not located in any areas that will negatively affect Physical Cultural Resources (PCRs).

ANTICIPATED PROJECT IMPACT

The project area is spread across the country. Implementation would be on the existing power infrastructure, which is built along the roads. All the environmental, social and any other impact would be already assessed and addressed. It is anticipated that no temporary negative impacts will occur under the "ICT connectivity" subcomponent. The general known and predictable impacts and mitigation measures envisaged during construction stage are highlighted below while the provisions for possible impacts and relevant mitigation measures anticipated during project sites screening for environmental and social criteria are presented below.

General Environmental Impacts during Pre-Construction/Construction Stage

Potential negatives impacts of the Project activities are expected to be mainly due to construction activities, such as dust and noise.

Vegetation and other natural environmental features: Efforts should be made to reduce impact of any environmental features and infrastructure facilities typically existing along the existing transmission routes. This should be conducted by work contractors, supervised by the service providers and DITT.

Temporary Detour of Access: Temporary detours of access are not envisaged during works.

Noise and Dust Emissions during construction: The contractor/ operator will be required to take actions to mitigate these impacts as it is their responsibility included in the construction contract. Mitigation measures should consider limiting construction time during the day (from 08:00 to 18:00)

[3] The Government of Bangladesh does not recognize the terminology (Indigenous People)

and apply dust control measures (water sprays) at construction sites. Added precautions will be adopted in the vicinity of schools and hospitals.

Also necessary mitigation measures for overhead optical fiber lines against accidental fall from elevated height during work (e.g. using body harness, waist belts, secured climbing devices, etc.) shall be taken.

To facilitate effective implementation of the mitigation during construction, Environmental Code of Practices (ECOPs) have been prepared and details are provided in Annex 2.

During the operation of the ICT connectivity component, backup power systems consisting of a combination of batteries (typically lead-acid batteries) and diesel-fueled electricity backup generators may be required. Operations and maintenance activities may also result in the generation of electronic wastes such as nickel cadmium batteries and printed circuit boards from computer and other electronic equipment as well as backup power batteries. This e-waste will need to be temporarily stored properly (avoiding direct contact with soil, water, people) and discarded as hazardous waste in special designated landfills.

Social Impacts

Land issues

No land acquisition is envisaged. As indicated earlier, existing transmission routes, facilities and buildings will be utilized. No-one will be forced or coerced into a leasing arrangement. No physical relocation of households will occur. The government will not exercise power of eminent domain to assist service providers secure land. Land tenure is fully established in across Bhutan and no issues are expected to arise under the subcomponent.

Indigenous Peoples

There are no Ethnic minorities in the project area. All citizens across the country will benefit from improved access to ICT services.

Potential Environmental and Social Impacts and Proposed Mitigation Measures (To be considered during Environmental and Social Screening of the Project Area during Project Implementation)

Table 1

Issue	Potential Impacts	Mitigation Measures
Terrestrial habitat alteration	Terrestrial and aquatic habitats may be altered during the construction of communications infrastructure depending on the type of infrastructure component and	Recommended measures to prevent and control impacts to terrestrial habitats during include: • No construction of any new transmission networks. All fiber

	proposed location. Potential impacts to habitat may be more significant during construction and installation of towers in previously undeveloped land.	optic networks will be laid on existing BPC transmission networks. • Trim tree branches in line with existing forestry rules and regulations. • Manage minor construction site activities as described in relevant sections of World Bank Group's General EHS Guidelines.
Hazardous materials and waste	Telecommunications processes do not normally require the use of significant amounts of hazardous materials. However, the operation of certain types of switching and transmitting equipment may require the use of backup power systems consisting of a combination of batteries (typically lead-acid batteries) and diesel-fueled electricity backup generators. Operations and maintenance activities may also result in the generation of electronic wastes such as nickel cadmium batteries and printed circuit boards from computer and other electronic equipment as well as backup power batteries.	Recommended hazardous materials management actions include: • Implementing fuel delivery procedures and spill prevention and control plans applicable to the delivery and storage of fuel for backup electric power systems, preferably providing secondary containment and overfill prevention for fuel storage tanks; • Implementing procedures for the management and disposal of lead acid batteries, including temporary storage, transport, and final disposal. Lead-acid batteries should be managed as a hazardous waste as described in the World Bank Group's General EHS Guidelines; and • Purchasing electronic equipment that meets international phase-out requirements for hazardous materials content and implementing procedures for the management of waste from existing equipment according to the hazardous waste guidance in the World Bank Group's General EHS Guidelines.
Air Emissions	Emissions from telecommunications projects may be primarily associated with the operation of vehicle fleets, use of backup power generators, and use of cooling and fire suppression systems.	Recommended management actions to minimize emissions include: • Implementation of vehicle fleet and power generator emissions management strategies as described in the World Bank Group's EHS Guidelines and avoiding the use of

		backup power generators as a permanent power source, if feasible; and • Ensuring that fire suppression systems use ozone-friendly technology.
Noise	The principal source of noise in telecommunications facilities is associated with the operation of backup power generators.	Recommended noise management action includes the use of noise suppression shields and mufflers as well as the location of noise generating sources away from residential or other noise sensitive receptors to meet the noise emissions levels provided in the World Bank Group's General EHS Guidelines.

Overall Project Positive Impacts and Socio-Economic Benefits

Telecommunications plays a major role in economic, social, and cultural growth and development. The Project is expected to lead to substantial social benefits and expected to benefit both male and female population as well as minors. The main social impacts of the project are the increased possibility of better and more affordable access to Internet services for Bhutanese and improved government service delivery. The project will: (a) enable cheaper and more widespread access to Internet services across Bhutan; (b) enable direct and indirect improvements in overall public sector service delivery because the project will reduce the costs of interacting with the Government and improve the efficiency of Government operations translating into increased number of eServices available online; (c) reduce isolation and enhance economic activities in rural areas; and (d) enlarge participation of private IT companies—in particular, small- and medium-sized enterprises in the development of the telecommunications sector and creation of applications for the Government

Consultation and Communication

Objective: Develop a communication and consultation strategy, to ensure that the project affected people as well as the vulnerable groups, including women, are fully aware of project design, impacts, civil works schedule and are duly consulted regarding the same to minimize adverse impacts and enhance possible benefits. Participatory workshops, household surveys, focus groups, etc. will be used to inform communities about possible project impacts, proposed mitigation measures, and to receive their feedback on their priorities and concerns, which in turn, will be used as key inputs for the preparation of any relevant Environmental and Social Plans. Focus groups will discuss gender issues, children and schooling, health, land and security, access to places of employment, livelihood generation issues, among others.

PMU will carry out consultations at various stages of the preparation of the relevant plans and the key stakeholders will be invited to participate in the deliberations for the formulation of the same. The opinions of stakeholders will be documented and incorporated in the planning as well as in designing socially acceptable mitigation measures.

The public consultation exercises undertaken involve information dissemination – i.e., informing the target audience about the details of the project intervention in question and inviting their comments before finalizing any plans. The consultations will be carried out with individuals during the screening survey stage and with both individuals and groups during the detailed environmental and social impact surveys. Based on preliminary assessments, scoping and initial field appraisals, participatory strategies will be devised to ensure the participation of the affected populations. This approach will help identifying social sensitivities and concerns so as to suitably modify the design and planning of the project intervention; review measures to avoid, reduce or mitigate adverse impacts. Public participation will continue and information will be made available during preparation and implementation of any relevant plan and will include, at a minimum, community meetings and focus-group discussions.

PUBLIC CONSULTATION AND PARTICIPATION PLAN FRAMEWORK

Needs for a Public Consultation and Participation Plan (PCPP)

Consultation and Participation (C&P) is a process through which stakeholders influence and share control over development initiatives, and the decisions and resources that affect them. It is a two way process wherein the EA, policy makers, beneficiaries and affected persons listen to each other and discuss their views and concerns in a project process. C&P increases the level of support for the Project and related activities from a range of stakeholders, which can speed up processing and reduce challenges during implementation. C&P hence improves the effectiveness, relevance, and sustainability of development activities in the long run. Communities which are expected to enjoy improved connectivity or will experience the same for the first time may not be aware of the benefits of these activities. People who live within the right of way for the lines to be installed, especially need to be made aware of these benefits and consulted on civil works schedules and any potential negative impacts so that proper mitigation measures may be designed. Gender considerations and needs of children have to be prioritized during the consultations as well as those pertaining to any identified vulnerable people.

Key Objectives of the PCPP

The PCPP is to design to ensure that adequate and timely information is made available to the project affected people and communities and sufficient opportunities are provided to them to voice their opinions and participate in influencing the upcoming project decisions and processes. The PCPP is intended to define objectives and establish the framework necessary to provide understandable

information to all stakeholders involved. The main objective of the PCPP is to ensure timely, effective and multi-directional communications between the EA and the affected persons and communities.

Guiding Principles of the PCPP

The PCPP is guided by the World Bank's safeguard policy OP 4.01. The policies give high priority to public consultation and participation and encourage incorporation of community's views in design and implementation of a socially and environmentally compliant project. These policies stress on ensuring that the affected persons and beneficiaries have not only been consulted but that their opinion are acknowledged and accounted for in project designs.

Key Stakeholders in the Project

A stakeholder is any person, group or institution that has an interest in an activity, plan or program. This includes intended beneficiaries and intermediaries, winners and losers, and those involved or excluded from decision-making processes. A stakeholder assessment will be undertaken for the purposes of implementing the above strategy.

Consultation & Participation from Feasibility to Detailed Design Stage

The public consultation processes in the project area was initiated under the feasibility study for the component and will continue until people started getting the benefits. The consultation process is also necessary during the detailed design period through formal and informal meetings, village level workshops, and disclosure of project impacts to the affected households and communities.

Public Consultation & Participation Processes in Project Implementation

The major C&P process that will be undertaken during the Project implementation will include the following:

- *Information Dissemination*
- *Public disclosure of Project-related documents in local language (s)*
- *Special Orientation and Consultation Sessions, workshops, focus groups (especially with women and vulnerable people)*

Stakeholders Engagement in Committees

In order to further facilitate participation and consultation with communities, participation of key stakeholders should be integrated in key Committees and Forums related to the Project such as Grievance Redress Committee and any other formed for the implementation of specific plans.

Institutional Arrangement for PCPP

PMU, as the project proponent, will have the overall responsibility for consultation with stakeholders and ensuring their participation in the project process and will design the structure of all consultation activities with assistance from the consultants. It will take responsibility for the organization of all aspects of consultation meetings and workshops excepting minute taking and recording of issues raised and commitments made with the help of implementing organization and agencies. The implementing agencies will be responsible for distribution of disclosures instruments among the various stakeholders including the affected persons.

Monitoring & Evaluation of PCPP

The Project Director (PD) will carry out regular internal monitoring of the C&P processes with input from the field operations. The Construction Supervision Consultant (CSC) will play a key role in carrying out supervision and monitoring of the PCPP and the C&P processes.

GENDER AND INCLUSION FRAMEWORK

Objective: Assess gender and social inclusion considerations related to project activities. This includes: identification of key gender and inclusion related participation issues; identification of possible roles for women and disadvantage (or vulnerable groups) in project objectives and activities; examine the differences in knowledge, attitudes, practices, roles, status, wellbeing, constraints, needs and priorities related to gender and other differences; assess the potential for differentiated impact of project based on gender and exclusion and identify options to maximize benefits and minimize adverse effects. This will be applicable to the consultation process for the installation of the overhead fiber optic lines, (which may traverse over individual houses where women may be spending the most part of the day, hence their convenience, cultural norms must be considered) and especially sub-component C2. The latter sub-component will increase the competitiveness of the region's ICT sector, by increasing the quantity and quality of skills. Support will include: (i) top up skills for computer science and IT college students to ensure that they are industry ready; (ii) training of youth to become online outsourcers; (iii) training for Government officers in middle management and IT skills to support their Chief Information Officer/ IT Parenting role; and (iv) cybersecurity capacity building. This sub-component has a huge potential for women and vulnerable people (such as the physically challenged) who may prefer to work from home, female students and women seeking job opportunities where suitable jobs are not available.

Relevant gender assessments will be undertaken during the ESIA for the installation of the overhead lines. Gender and inclusion assessments and surveys will be carried out among a cross-section of people on a sample basis from the population of people expected to benefit from the skills development and capacity-building sub-component, e.g. students, women and communities living in remote areas previously not connected, women and communities where connectivity exists but women and vulnerable people do not participate in ICT related services/jobs in significant numbers. The focus of the surveys will be on understanding needs and priorities, opportunities and constraints,

feedback on how to enhance the opportunities and reduce the constraints, among others. The feedback will be utilized to develop the site-specific training and skills development programs to incorporate gender needs and priorities, enhance opportunities for participation in such programs for women and vulnerable people.

Purpose and Objectives of Gender and Inclusion Plan

The purpose of the Gender and Inclusion Action Plan (GIAP) is to understand and analyze the impact of the project on gender and inclusion related issues, in particular women and develop interventions that mitigate harmful effects on male and female population within the program area and promote gender mainstreaming.

Overall objectives of the GAP are

1) To allow women and previously excluded communities, vulnerable people to maximize their access to the program benefits
2) To mitigate harmful gendered impact on affected male and female population within the priority batch and
3) To build capacity of the implementing agencies to mainstream gender and enhance benefits for previously excluded communities, vulnerable people
4) Information dissemination to the target groups

Implementation Arrangements

The PMU and PD will be responsible for designing and conducting the relevant assessments and surveys, and subsequently designing GIAPs which will specify how to design site specific training and skills development, capacity building programs, enhance opportunities for the participation of women and previously excluded groups, vulnerable people, and implement the programs in a gender sensitized and culturally appropriate manner. The PMU will hire gender specialists and inclusion experts as appropriate to design, conduct and implement the above.

GRIEVANCE REDRESS MECHANISM

Grievance Redress Mechanism (GRM) is a valuable tool, which will allow affected people to voice concerns regarding environmental and social impacts of the proposed project. A Grievance Redress Committee (GRC) will be formed to address grievances. The GRC will be a forum where people will exercise their rights of participation in the project cycle through suggestions and complains. GRCs will also be para-legal court of the project to address local problems and complaints related to social and environmental impacts. A GRC will be formed for sub-project, headed by the Secretary (Chairman) of the MoIC. Members will be taken to represent the communities and all other relevant stakeholders. The members of the GRC will be nominated by the Chairman. The Chairman will form the GRC and forward the composition to the Project Director (PD) of the sub-project. Table 2 shows the composition of the GRC.

Table 2: Structure of Grievance Redress Committee (GRC):

Chairman	Secretary MoIC
Member-Secretary	Director, DITT
Member	Representative from DLG
	Representative of BICMA
	Representative of BPC
	Representative of Telecos/ISPs
	Representative of NLC
	Representative from any other relevant stakeholder on case by case basis

The GRC will ensure proper presentation of complaints and grievances, as well as impartial hearings and transparent decisions. The sub-project-affected persons can register their grievances at the complaint cell. The GRCs will meet periodically to discuss the merit of each case and fix a date for hearing and notify the PAPs to submit necessary documents in proof of her/his claim/case; resolve grievances within one month of receipt of complaint. Additional details regarding the functioning of GRC is presented in the SMF. The contact phone number of the Project Coordination Unit (PCU) will serve as a hotline for complaints.

ESMF PROCESS

This section outlines the screening, review, and approval process for activities to be financed under the "ICT Connectivity" Component of the project. The locations have already been identified. No land acquisition will take place. All networks will be developed using the existing transmission networks of the BPC.

Environmental and Social Management Objective

The main objective of the ESMF is to ensure that the activities to be financed under the Project would not create adverse impacts to the local environment and residents and that the unavoidable impacts will be adequately mitigated in line with the applicable WB's safeguard policies. The ESMF has been designed to comprise the following key steps: (1) safeguard screening and impacts assessment through site surveys of project areas; (2) preparation of mitigation measures and documentation (ECOPs); and (3) implementation, monitoring, and reporting.

The environmental and social safeguard screening, impact assessment, and preparation of site specific ECOPs or EMPs (following formats provided in the Annexes) under Component 3 will be carried out during Project implementation and will be submitted for WB clearance before their approval and implementation.

Assessment and classification of impact: only an **EMP/ECOP will be required** (see Annex 2), since the impacts are not significant and can be easily addressed through the implementation of a mitigation and monitoring plan during construction and project component implementation.

Project Implementation Arrangements

The Project subcomponent will be managed and implemented by the Department of Information, Technology and Telecommunications (DITT) of the Royal Government of Bhutan's Ministry of Information and Communications.

High-level management of the project and strategic policy guidance in its implementation will be provided by a Steering Committee, comprising representatives of the two implementation agencies (DoT and DITT), and key relevant agencies including DoR, Department of Revenue and Customs (DRC), and the Department of Project Accounts, MoF.

The DITT Director will serve as Project Director for the Digital Connectivity component. The DITT will appoint a safeguard focal officer to supervise all environmental and social safeguards aspects of the component.

DISCLOSURE

The implementing agencies will also arrange to disclose the final versions of the ESMF and the Executive Summary in English and all EA/ SA / EMP/ SMP/GIAP, in English and local languages, in all the relevant regional/local government offices. Any updated versions would also be disclosed similarly.

The World Bank will disclose this ESMF and the Executive Summary and any future EA/ SA along with EMP/ SMP/GIAP at the Infoshop.

Environmental and Social Monitoring

Environmental and social monitoring should address all possible environmental and social impacts that may arise from the project, with the focus on Component 3. The DITT team will appoint an officer to serve as Safeguard Focal Point for the project component.

The safeguard focal point will supervise any safeguard instruments and will identify any problems as they arise during implementation and recommend means to resolve then.

PART TWO: ESMF (INDIA & BANGLADESH)

The SMF provides the principles, processes and guidelines for social screening, social impact assessment and preparation of Resettlement Action Plans (RAPs) and Indigenous/Tribal People Plan (I/TPPs), where necessary. It includes detailed guideline for carrying out social screening, guidelines for consultation and participation at different stages of project implementation, guidelines for social impact assessment (SIA) and preparation of RAP, a Grievance Redress Mechanism (GRM), and an Indigenous/ tribal people planning framework, including guidelines for preparation of indigenous/tribal people plan (I/TPP).

OBJECTIVES OF THE SMF

The SMF is designed to ensure that the social development principles are mainstreamed into the project design. The objectives of the SMF are the following:

- Enhance social development outcomes of the activities to be implemented under individual sub-projects;
- Promote transparency in project implementation through the use of extensive stakeholder consultation and disclosure procedures;
- Avoid, minimize, and mitigate adverse social impacts including loss of livelihood, if any;
- Identify and compensate for unavoidable adverse social impacts that sub-projects might cause on people, including protection against loss of livelihoods;
- Ensure compliance with the relevant government policies and those of the World Bank on social safeguards and other social issues; and

SOCIAL MANAGEMENT PRINCIPLES

Inclusion

The contractor/implementing agency will ensure that vulnerable section of the communities including the very poor, women, tribal people, minority communities, and the marginalized and/or, disabled people, etc. have ample “voice” during consultations and their feedback is recorded and incorporated in sub-project design wherever possible. Mitigation measures, particularly compensation modalities and design must be cognizant of incorporating their feedback and enhancing to the extent possible project benefits for them.

Participation

The communities are empowered with an opportunity to decide, implement and monitor the development programs. Accordingly, the focus should be to promote participatory processes throughout the project design and implementation cycle.

Transparency

Stakeholders can exercise their rights to access information on the proposed development project. The contractor/implementing agency is to disclose project information in public domain. This creates an enabling environment to develop trust among implementing partners and builds in checks and balances to strengthen the system. Sub-project information will be disclosed in public domain including the environmental/social screening/assessment reports and resettlement action plan, where applicable.

Social Accountability

Social accountability tools are to be implemented to improve people's participation and transparency. Steps to strengthen transparency and accountability include display of information of all activities including cost, at prominent and public places, participation of communities in monitoring and evaluation, and use simple formats for reporting the findings at planning, implementation and operational phases. Specific measures are to be designed on (i) consultation, feedback and grievance-redress mechanisms to alert project staff to problems identified by beneficiaries, affected people, and other stakeholders; (ii) participatory planning to ensure the project meets the needs of beneficiaries; and (iii) participatory monitoring and evaluation for identification of problems.

Social Safeguards

Legal and policy framework provides guidelines for acquisition of land and assets and compensation measures for the assets acquired, damaged, assets or livelihoods temporarily or permanently affected. The project is to be designed to avoid or minimize, to the extent possible, the adverse impacts caused by land acquisition or displacement, adverse impacts on livelihoods associated with the implementation of sub-projects. The contractor/implementing agency will prepare subproject assessments and plans based on the following principles, which are to be mainstreamed by adopting appropriate process for social impact assessment and mitigation of impacts:

- Acquisition of private and public lands causing physical displacement of people will be avoided or minimized to the extent possible.
- The contractor/implementing agency may also opt to purchase the required lands directly through negotiation and get them in exchange of similar lands or on contribution against compensation.
- In case of direct purchase from private owners the process has to be transparent, a verifiable reasonable benchmark for market price has to be established for each area, purchase price should be at current market price and the price should include the costs of taxes and transfers, and copies of deeds is to be shared with the World Bank. In case of direct purchase of land, RAP will not be required.
- Compensation for all affected structures will be done at replacement value plus its shifting cost.

- All impacts on income and livelihoods will be compensated for, and livelihood restoration programs will be undertaken where required.
- Lands owned by indigenous/tribal people will be avoided as far as possible and lands owned by any other vulnerable groups will be considered in exceptional circumstances, if no other feasible alternatives are available.

Communication Strategy

Strategic communications approach is a social process of dialogue, negotiation, and consensus building through the use of a variety of methods. Based on principles of inclusion, transparency and accountability, the communication strategy aims to enhance the ability of stakeholders to engage, influence local level institutions and hold them accountable for their work. The communications model is a community owned communication strategy that encourages civic engagement, where the community is part of the planning and monitoring process of the schemes. This is a long term process of continued dialogue, clarifying issues under discussions and finding solutions to matters of common concern. Through engagement, a space is created where issues can be openly discussed, compromises can be negotiated and solutions acceptable to the majority are accepted and ratified. This strategy seeks to foster social, political, and institutional changes at different levels by building trust among implementers and the users, promoting a two-way communication, exchanging knowledge and skills for a sustainable change in both availability of services and behavior that is consistent with fact on the ground. The best technically designed project can fail or have weak results if decision makers and the beneficiaries are not duly consulted, informed and mobilized.

Grievance Redressal

The proposed project is to establish a Grievance Redress Mechanism (GRM) to answer to queries, receive suggestions and address complaints and grievances about any irregularities in application of the guidelines adopted in the ESMF, and assessment and mitigation of environmental/social impacts. The mechanism will assist in resolving issues/conflicts amicably and quickly, saving the aggrieved persons from having to resort to expensive, time-consuming legal action. The mechanism will however not deprive a person of his/her right to go to the courts of law.

Approval and Disclosure

Environmental/social screening of each sub-project and IEE/ESIA/RAP/Indigenous/Tribal Peoples Plans wherever required, are to be subject to review and clearance by the World Bank. Executive Summary of all safeguard documents including the ESMF, ESIA, RAPs, I/TPPs and other social plans are to be translated into local languages and disclosed locally and the English versions disclosed through the Bank's Info-shop. The contractor/implementing agency will upload the ESMF in their official websites along with a local language translation of the executive summary. The same process will be followed for all subsequent plans prepared.

SUB-COMPONENT DESCRIPTION

This sub component includes international connectivity between Bhutan and Cox Bazar, Bangladesh via India . This also includes strengthening domestic optical fiber connectivity to improve reliability within Bhutan. Most of the connectivity in India and Bangladesh will be provided on the existing optical fiber system. There may be a possibility that last mile connectivity at Bhutan-India border on India side may be provided with a new optical fiber cable. This may be either on existing electricity transmission line or underground. To do the underground work, no land acquisition will be involved. To do this temporary trenching may be done which will be refilled and restored to original shape. On Bhutan side, whole new optical fiber cable will be laid on the existing electricity line and hence no environmental or social implications. On Bangladesh side, no new optical fiber cable may be required.

The contractor/implementing agency for implementing package 2 of the Bhutan Regional Connectivity Project, will identify, review and abide by all *laws of the host country and World Bank OP 4.01, 4.12 and 4.10* that are applicable to land acquisition, involuntary resettlement, and indigenous/tribal people in the Bangladesh and India side; including:

i. The scope of the power of eminent domain and the nature of compensation associated with it, both the procedures for assessing compensation values and the schedule for making compensation payments.
ii. The legal and administrative procedures applicable, including the appeals process and the normal time for such procedures.
iii. Land titling and registration procedures.
iv. Laws and regulations relating to agencies responsible for implementing resettlement and those related to land compensation, consolidation, land use, environment, water use and social welfare.

While the activities on the Bhutan side will not result in any land acquisition, temporary or permanent displacement of people and or adverse impact on livelihoods, damages to private property and assets, there may be minor impacts on the Bangladesh and India side given the density of population, probability of activities taking place in areas where indigenous/tribal people live, construction of some new infrastructure to connect existing gaps in connectivity. It is highly unlikely (from the experience of similar projects) that land acquisition will be required. If at all, it will be reserved as the last option after exploring availability of encumbrance free public lands, leveraging the use of existing infrastructure and purchasing land on a willing buyer willing seller basis where it is absolutely necessary. In most cases, impacts are expected to be minor and temporary in nature, easily reversible and mitigatable through adequate information dissemination, consultation with local people, compensation to eligible affected parties in accordance with the entitlement matrix and guidance on preparing Resettlement Action Plans (RAPs) provided in this Resettlement Policy Framework (RPF). If less than 200 people are impacted by the site specific sub-project and

Abbreviated Resettlement Action Plan (ARAP) will be prepared. Where the Social Impact Assessment (SIA) and field level screening show the presence of indigenous/tribal people in the right of way of project area, and/or any impacts on them (positive or negative) an Indigenous/Tribal People's Plan will be prepared in accordance with the guidance provided in this Indigenous/Tribal Peoples Framework.

World Bank's Safeguard Policies

OP 4.12 Requirements (Involuntary Resettlement)

The primary objective of the World Bank policy is to explore all alternatives to avoid or minimize involuntary resettlement. Where resettlement is unavoidable, the resettlement activities should be conceived and executed as sustainable development programs, providing sufficient resources to enable affected persons to share in project benefits and to assist in their efforts to improve their livelihood and standard of living or at least to restore them to pre-project level. The policy also requires that affected people are meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.

Measures required to ensure that resettlement has a positive outcome are as follows:

i. Providing project-affected persons with options; permitting their participation in planning and selecting these options; prompt compensation at full replacement cost for losses; choosing relocation sites that provide, at a minimum, the same benefits as the sites that are replaced;
ii. Providing allowances and other assistance to make a smooth transition after displacement
iii. Identifying vulnerable groups and providing special assistance to these groups
iv. Implementing an institutional structure that supports the process to a successful end.

World Bank's policy on Involuntary Resettlement requires payment of compensation and other assistance to project affected people before they are displaced from their existing locations. Further, the policy requires income rehabilitation assistance to those affected due to the loss of their productive assets or loss of incomes and livelihood.

Absence of legal title does not exclude affected individuals from the eligibility to receive compensation and or other assistance (squatters and encroachers are not compensated for land that they occupy). The Policy also requires that those without a legal title should be given assistance to meet the objectives of the policy. The genesis of these rights may come from continued possession of public land where the government has not sought eviction. The Bank's policy also recognizes that stakeholders who illegally occupy project-affected areas after established cut-off-date for any components are not eligible for compensation.

The principles for World Bank OP 4.12, involuntary resettlement are:

i. Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project plans

ii. Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs.
iii. Displaced persons should be assisted in their efforts to improve their livelihoods and standards or at least restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.
iv. Compensation must be paid in full for all damages/impacts on property, structures, crops, trees, common property resources, access to resources, any livelihood impacts whether temporary or permanent.

OP 4.10 Requirements (Indigenous Peoples)

This policy contributes to the WB's mission of poverty reduction and sustainable development by ensuring that the development process fully respects the dignity, human rights, economies, and cultures of. The Bank recognizes that the identities and cultures of Indigenous Peoples are inextricably linked to the lands on which they live and the natural resources on which they depend. These distinct circumstances expose Indigenous Peoples to different types of risks and levels of impacts from development projects, including loss of identity, culture, and customary livelihoods, as well as exposure to disease. As social groups with identities that are often distinct from dominant groups in their national societies, Indigenous Peoples are frequently among the most marginalized and vulnerable segments of the population. A project proposed for Bank financing that affects Indigenous/Tribal Peoples requires:

i. Screening by the Bank to identify whether Indigenous/Tribal Peoples are present in, or have collective attachment to, the project area
ii. A social assessment by the borrower/contractor/implementing agency
iii. A process of free, prior, and informed consultation with the affected Indigenous/Tribal Peoples' communities at each stage of the project, and particularly during project preparation, to fully identify their views and ascertain their broad community support for the project.
iv. The preparation of an Indigenous/Tribal Peoples Plan (I/TPP) based on OP 4.10 and in this case, the Indigenous/Tribal Peoples Framework (I/TPF) provided in this ESMF.
v. Disclosure of the draft and final Indigenous/Tribal Peoples Plan; draft and final Indigenous/Tribal Peoples Framework

The Bangladesh Government does not recognize the term "indigenous"; therefore for all plans to be based on this framework the term "tribal" will be used instead for documents pertaining to Bangladesh.

Comparison of Requirements of GoB, GOI, and WB OPs

There are some differences between the national laws of the relevant countries and the World Bank OPs, which require:

i. Payment of adequate compensation for various losses at replacement value.

ii. Rehabilitation to ensure improvement/or at least restoration of lost economic activities, income and standard of living.
iii. Public consultation during the entire process of social assessment and disclosure of information (where ensuring that the information available to stakeholders is adequate and accessible is key)
iv. A grievance procedure that is accessible and adequately responsive (time for processing claims, etc) A Resettlement Action Plan, and where appropriate, an Indigenous Peoples' Development Plan

The Table 3 lists some key comparisons between Bangladesh Law, Indian Law and WB policy regarding land acquisition and compensation.

Table 3: Comparison of Bangladesh Law and World Bank OP 4.12

Issue	GOB Laws	OP 4.12
Coverage	Legal owners Share-croppers Tenants	All affected parties, including squatters and illegal occupants
Compensation	Based on market values over previous 12 months	Replacement cost for all lost assets, including land and structures at current market price. Requires livelihood restoration component.
Uses of material from dismantled structures	Material is to be auctioned after being compensated for it	Material can be taken and re-used by affected party
Minimization of impacts	Discourages unnecessary acquisition but no mechanism to monitor	Alternative analysis required to justify avoidance and/or mitigation of impacts
Cut-off dates	Not addressed	Important to ensure that squatters are included in compensation and to prevent rent-seeking behavior of additional squatters settling onto project land
Consultation	No consultation required	Consultation as core issue in RAP preparation and implementation
Relocation assistance	No assistance provided	Relocation assistance required
Livelihood restoration	Not addressed	Livelihood restoration component and attention to post-resettlement required

Table 4: Comparison of Indian Law and World Bank OP 4.12

S.No	World Bank Involuntary Resettlement Requirement	If covered in RFCTLARR Act, 2013	Remarks and provisions in RFCTLARR Act 2013
Policy Objectives			
1	Avoid involuntary resettlement (IR) wherever feasible	Yes	Social Impact assessment (SIA) should include: (i) whether the extent of land proposed for acquisition is the absolute bare minimum extent needed for the project; (ii) whether land acquisition at an alternate place has been considered and found not feasible [Ref: Section 4 sub-section 4(d) and 4(e)]
2	If IR is unavoidable, minimise involuntary resettlement by exploring viable alternate project design	No	The provision for exploring alternate project deisgn to minimize the IR is not mentioned in the RFCTLARR Act 2013
3	Where resettlement cannot be avoided, resettlement activities should be conceived and executed as a development programme by providing sufficient resources to enable DPs to share in project benefits.	Yes	The cumulative outcome of compulsory acquisition should be that affected persons become partners in development leading [Ref: Preamble of the RFCTLARR ACT]
4	DPs should be meaningfully consulted and provided opportunities to participate in planning and implementing resettlement programs.	Yes	Whenever a SIA is required, the appropriate Government shall ensure that a public hearing is held at the affected area, after giving adequate publicity about the date, time and venue for the public hearing, to ascertain the views of the affected families to be recorded and included in the SIA Report. [Ref: Section 5]
5	DPs should be assisted in their efforts to improve their livelihoods and standards of living, or at least restore them, to	Yes	The cumulative outcome of compulsory acquisition should be that affected persons become partners in development leading to an improvement in their post acquisition social and economic status and for matters

	pre-displacement levels or to pre-project levels		connected therewith or incidental thereto [Ref: Preamble of the RFCTLARR ACT]
Impacts Covered			
6	Involuntary taking of land resulting in relocation or loss of shelter	Yes	
7	Involuntary taking of land resulting in loss of assets or access to assets	Yes	In the definition of affected family, it includes 'a family whose land or other immovable property has been acquired' [Ref: Section 3 sub-section c (i)]
8	Involuntary taking of land resulting in loss of income sources or means of livelihood, whether or not the affected persons must move to another place	Yes	In the definition of affected family in includes 'a family which does not own any land but a member or members of such family may be agricultural labourers, tenants including any form of tenancy or holding of usufruct right, share-croppers or artisans or who may be working in the affected area for three years prior to the acquisition of the land, whose primary source of livelihood stand affected by the acquisition of land; and further, a distinction is made between affected family and displaced family in the definition (i.e) a displaced family means any family, who on account of acquisition of land has to be relocated and resettled from the affected area to the resettlement area [Ref: Section 3 sub-section c (ii) and k
9	Involuntary restriction of access to of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.	Yes	In the definition of affected family in includes 'family whose primary source of livelihood for three years prior to the acquisition of the land is dependent on forests or water bodies and includes gatherers of forest produce, hunters, fisher folk and boatmen and such livelihood is

			affected due to acquisition of land' [Ref: Section 3 sub-section c (vi)]
Policy Applicability			
10	The policy applies to all components of the project that result in IR, regardless of the source of financing.	Yes	The provisions of this Act relating to land acquisition, compensation, rehabilitation and resettlement, shall apply, when the appropriate Government acquires land for its own use, hold and control, including for Public Sector Undertakings and for public purpose (defined) However, for PPP projects and private companies requiring land for public purpose (defined), then prior consent of affected families is required. [Ref: Section 2 sub-section 1 and 2]
11	It also applies to other activities resulting in IR that are: (i) directly and significantly related to the Bank-assisted project; (ii) necessary to achieve its objectives as set forth in the project documents; and (iii) carried out, or planned to be carried out, contemporaneously with the project.	Yes	Same as above
Eligibility Criteria			
12	Those who have formal legal rights to land (including customary and traditional rights recognized under the laws of the country)	Yes	In the definition of affected family, it includes 'a family whose land or other immovable property has been acquired' [Ref: Section 3 sub-section c (i)]
13	Those who do not have formal legal rights to land at the time the census begins but have a claim to such land or assets--provided that such claims are recognized under the laws of the country or	Yes	In the definition of affected family, it includes 'the Scheduled Tribes and other traditional forest dwellers who have lost any of their forest rights recognised under the Scheduled Tribes and Other Traditional

	become recognized through a process identified in the resettlement plan		Forest Dwellers (Recognition of Forest Rights) Act, 2006 due to acquisition of land'; and also includes 'a member of the family who has been assigned land by the State Government or the Central Government under any of its schemes and such land is under acquisition'. [Ref: Section 3 sub-section c(iii) and (v)]
14	Those who have no recognizable legal right or claim to the land they are occupying.	Yes	As per Schedule II, the elements of rehabiltation and resettlement is provided for all the affected families (both land owners and the families whose livelihood is primarly dependent on the land acquired
Require Measures			
15	Ensure DPs are informed about their options and rights pertaining to resettlement	Yes	Whenever a SIA is required, the appropriate Government shall ensure that a public hearing is held at the affected area, after giving adequate publicity about the date, time and venue for the public hearing, to ascertain the views of the affected families to be recorded and included in the SIA Report. [Ref: Section 5]
16	Ensure DPs are consulted on, offered choices among, and provided with technically and economically feasible resettlement alternatives	Yes	Same as above
17	Ensure APs are provided prompt and effective compensation at full replacement cost for losses of assets attributable directly to the project.	Yes	Though explicitly not stated, the compensations are expected to be much more than replacement costs. Total compensation and monetary benefits under R & R have to paid to PAPs before possession of land is granted. {Section -38 (1)}

18	If there is physical relocation, provide DPs with (i) assistance (such as moving allowances) during relocation; and (ii) residential housing, or housing sites, or, as required, agricultural sites for which a combination of productive potential, locational advantages, and other factors is at least equivalent to the advantages of the old site.	Yes	The Rehabilitation and Resettlement Award shall include all of the following: (c) particulars of house site and house to be allotted, in case of displaced families; (d) particulars of land allotted to the displaced families; (e) particulars of one time subsistence allowance and transportation allowance in case of displaced families; [Ref: Section 31 sub-section 2(c), (d) and (e)]
19	Particular attention to be paid to the needs of vulnerable groups among those displaced, especially those below the poverty line, the landless, the elderly, women and children, indigenous peoples, ethnic minorities, or other displaced persons who may not be protected through national land compensation legislation	Yes (partly)	The act provides for special provisions and assistance for scheduled caste and scheduled tribe in scheduled area. [Ref: Section 41] Further the act recognizes widows, divorcees and women deserted by families as separate families [Ref: Section sub-section (m)] The act does not recognize other vulnerable category and also SC/ST from non-scheduled areas.
20	Provision of compensation and of other assistance required for relocation, prior to displacement, and preparation and provision of resettlement sites with adequate facilities, where required. In particular, taking of land and related assets may take place only after compensation has been paid and, where applicable resettlement sites and moving allowances have been provided to the displaced persons.	Yes	Total compensation and monetary benefits under R & R have to paid to PAPs before possession of land is granted. {Section -38 (1)}.

21	Preference should be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based.	Yes	Land for land is recommended inirrigation projects and in projects where SC/ST is involved equivalent land. [Ref: Second Schedule S.No.2]
22	Cash compensation levels should be sufficient to replace the lost land and other assets at full replacement cost in local markets.	Yes(partly)	Not explicitly stated, but the method of valuation of land and considering the higher among the 2-methods, the multiplying factor and the 100 solatium with 12% interest will be near equivalent to replacement cost for land. For structure, tree and crops, valuation by appropriate authority will be near equivalent to replacement value, but is silent about depreciating. [Ref: Section 26 sub-section 1 and 2, Section 29 and Section 30]
23	Displaced persons and their communities, and any host communities receiving them, are provided timely and relevant information, consulted on resettlement options, and offered opportunities to participate in planning, implementing, and monitoring resettlement	Yes	The appropriate Government shall ensure that the Social Impact Assessment study report and the Social Impact Management Plan, are prepared and made available in the local language to the Panchayat, Municipality or Municipal Corporation, as the case may be, and the offices of the District Collector, the Sub-Divisional Magistrate and the Tehsil, and shall be published in the affected areas, in such manner as may be prescribed, and uploaded on the website of the appropriate Government. [Ref: Section 6 sub-section 1]
24	Appropriate and accessible grievance mechanisms are established for these groups.	Yes	For the purpose of providing speedy disposal of disputes relating to land acquisition. compensation, rehabilitation and resettlement, establish, by notification. one or more Authorities to be known as "the Land Acquisition, Rehabilitation and

			Resettlement Authority" [Ref: Section 51 sub-section 1]
25	In new resettlement sites or host communities, infrastructure and public services are provided as necessary to improve, restore, or maintain accessibility and levels of service for the displaced persons and host communities.	Yes	In every resettlement area as defined under this Act, the Collector shall ensure the provision of all infrastructural facilities and basic minimum amenities specified in the Third Schedule of the RFCTLARR Act. [Ref: Section 32]
26	Provide relocation assistance to displaced persons	Yes	Each affected family is to be given one time Resettlement Allowance of Rs. 50,000/-
27	Disclose the resettlement plan, including documentation of the consultation in an accessible place and a form and language(s) understand-able to affected persons and other stakeholders.	Yes	Discloser of R&R Scheme along with records of public hearing to be put in public domain by uploading on specified website as well as placement in Panchayat/ Municipality in vernacular language. { Sec. 19 (4)}
28	Monitor and assess resettlement outcomes, their impacts on the standards of living of displaced persons.	Yes	Provision of post implementation social audit by R&R Commissioner Rehabilitation & Resettlement Committee to carry out post implementation social audit in consultation with Gram Sabha/ Municipality. { Sec. 44 (3) & 45}

Table 5: Addressing World Bank Safeguard Policies

World Bank Policy	Reasons of Applicability	Addressed by

Involuntary Resettlement OP 4.12	Project may require physical relocation of people or entire communities and/or private property acquisition (land, commercial, residential and other structures) leading to resettlement. Adverse impacts on livelihood or accessibility (temporary or permanent), damage to assets (partial or substantial)	A process of consultation, including adequate and accessible disclosure of any resettlement information. Preparation of SIA, a Resettlement Framework and/or RAP including a compensation plan and entitlement policy and updating them in accordance with changes in the Project involving land acquisition. This includes an accessible grievance procedure.
Indigenous Peoples OP 4.10	Project affecting the dignity, human rights, economic and cultures of Indigenous Peoples because of acquisition of land and common resources on which they depend for their social, economic and cultural needs and also their homesteads requiring relocation. The policy is triggered due to ANY impact; not necessarily adverse in nature. Hence one of the core principles of the policy is adequate and culturally sensitized consultation, enhancing project benefits for IPs and improving accessibility to project benefits. Information dissemination at the right time and garnering support for the project is essential.	Preparation of Indigenous/Tribal[4] Peoples' Plan (I/TPP) based on Social Impact Assessment that involves free, prior and informed consultations and updating it in accordance with changes in the Project that involves Indigenous/Tribal Peoples.

GUIDELINES FOR CARRYING OUT A SOCIAL IMPACT ANALYSIS

The principal objectives of the SIA are to identify viable alternatives; identify potential social impacts, including direct or indirect, permanent or temporary, physical or economic; assessing their significance; design least-cost mitigation measures; develop RAPs and monitoring requirements; develop I/TPP; formulate institutional arrangements; and ensure meaningful public consultation and information disclosure procedures. The SIA will identify and estimate impacts, risks and opportunities and suggest measures to avoiding or minimizing, mitigating and managing, and compensating adverse social impacts.

The major activities carried out for the Social Impact Assessment (SIA) are summarized below.

[4] The Government of Bangladesh does not recognize the terminology "indigenous" as per its constitution and hence any IP planning documents for GOB will be termed Tribal Peoples Framework or Plan.

- Baseline social surveys covering areas in and around the proposed locations/routes of overhead/underground optic fiber lines;
- Identification and scoping of possible social impacts of the proposed sub-project activities, and selection of parameters for social impact assessment;
- Prediction and evaluation of social impacts and suggestion of mitigation measures to offset adverse impacts;
- Analysis of alternatives;
- Public/stakeholder consultations, including Focus Group Discussions (FGDs) and Interviews;
- Preparation of SIA report;
- Preparation of RAP/Abbreviated RAP, if needed;
- Preparation of I/TPP, if needed.

Socio-economic baseline

For carrying out SIA, it is important to have a clear understanding of the baseline socio-economic condition of people, especially those living within the sub-project influence areas. A common approach for quick assessment of baseline socio-economic condition is questionnaire survey. The primary objectives of a questionnaire survey are:

a) to understand people's socio-economic condition;
b) to understand extent of people's access to basic services; and
c) to understand people's perception regarding the sub-project.

A sample questionnaire for carrying out baseline socio-economic survey is presented in Annex 7.

Project activities and parameters for SIA

The typical socio-economic impacts from implementation of these sub-projects include loss of land (for control stations, new infrastructure for overhead lines, temporary losses to property or livelihoods due to laying underground lines); loss of income; impact on indigenous/tribal population, impact on archaeological/ historical sites; traffic congestion; and employment generation. Procedures for evaluating and assessing areas of cultural heritage significance, chance find procedures are discussed in the Annexes.

Public/stakeholder consultation

The objectives of consultation and participation process are to inform, consult, engage, collaborate and empower the communities and other local stakeholders in the sub-project cycle at the field level. Consultation and community participation will be undertaken to achieve the following specific objectives at subproject identification, planning, design, implementation and evaluation stages:

- Identification – to sensitize the community about the sub-project and their role and identify inclusive ground needs;

- Planning – to ensure transparency of the planning process, reflect community expectations in project design, acceptable work schedule and procedures; ensure identification of adverse impacts and measures to mitigate them;
- Implementation – to ensure that benefit accrues to the targeted beneficiaries inclusive of all groups including the very poor and vulnerable groups and the quality of works are satisfactory to the communities.
- Review and evaluation – to evaluate the beneficiary satisfaction and outcomes of the subprojects for intended benefits to targeted beneficiaries.

Involvement of communities is not limited to interactions with them but also disclosing relevant information pertaining to the project tasks and targets. Consultation and participation involves communities and other stakeholders, which will take place through interpersonal communications, focused group discussions (FGDs) and small and large community meetings, whichever suitable. Annex 9 present guidelines for carrying out public consultations at different stages of a sub-project cycle. In order to understand how the stakeholder consultation process may work out, the results of the outcome of some Key Informant Interviews were carried out as a part of the environmental and social impact assessment of fiber optic cable laying operation.

RESETTLEMENT POLICY FRAMEWORK:

GUIDELINES FOR PREPARATION AND IMPLEMENTATION OF A RESETTLEMENT ACTION PLAN

Land acquisition and RAP

The project approach discourages acquisition of private lands and displacement of people for project purpose. It is highly unlikely, given the nature of civil works required, that any large scale acquisition or impacts will occur due to this project component. However, certain sub-projects (e.g., new infrastructure to link connectivity gaps) may require small scale acquisition of private land and/or minor temporary impacts on people (e.g. due to laying overhead cables). Once it is determined through the social screening that a sub-project will require land acquisition, involve population displacement and/or impacts on livelihoods, a Resettlement Action Plan (RAP) needs to be prepared.

RAPs are designed to ensure that impacts arising from land acquisition, displacement, relocation, any impacts on livelihoods, damage or loss of property are mitigated, managed and compensated for at replacement value. The RAP focuses on people affected by loss of land, structures, crops and trees, loss of access to common property resources, loss of incomes and wages (including rental income)

and all other identified impacts. The impacts can be temporary or permanent; lack of title is not a bar to eligibility (squatters will be compensated for structures and all other losses except land costs). Livelihood restoration, benefits for vulnerable people, shifting allowances, rent for temporary shifting etc. among others will be covered under the RAP in keeping with the identified impacts and mitigation measures devised by the RAP in consultation with affected people.

A detailed guideline for preparation of RAP is provided below. It presents a discussion on major issues concerning land acquisition and resettlement; it presents impact mitigation objectives and principles, eligibility for compensation/assistance and principles for providing compensation/assistance. It also provides detail description of land acquisition process, and processes for preparation and implementation of sub-project specific RAP. It presents a method for market price survey, and a compensation and entitlement matrix.

Access to Information

Summary of the ESMF report and impact mitigation measures will be translated into local language and disseminated locally. Copies of the full report (in English) and the summary (in local language) will be sent to all the concerned offices of the contractor/implementing agency, and will be made available to the public.

Impact Mitigation Principles

Where physical activities affect persons/households on public or private lands, the contractor/implementing agency will adhere to the following principles to avoid/minimize adverse impacts and adopt appropriate mitigation measures:

- As a first step toward mitigating adverse impacts, the contractor/implementing agency will always try to avoid adversely affecting persons/households who are socioeconomically vulnerable.
- Where adverse impacts are absolutely unavoidable, the contractor/implementing agency will ensure that the affected persons / households are fully compensated and rehabilitated with measures acceptable to them.
- Where displacement of public land users is unavoidable, the contractor/implementing agency will assist the affected persons/households to relocate on available public lands in the vicinity.
- Where businesses are displaced, or livelihoods are impacted, even temporarily, the contractor/implementing agency will assist them to relocate in the vicinity/compensate for income loss to ensure that they remain operational and do not lose income.
- Where public land is unavailable direct purchase will be attempted and acquisition will be considered as the last resort, when all efforts fail.

RAP will be prepared following the guidelines and principles contained in this ESMF. The contractor/implementing agency will implement the RAP once the subproject is accepted for finance before any civil works are initiated.

Eligibility for Compensation/Assistance

The persons/households affected directly and indirectly by the physical activities under a subproject are eligible for compensation and assistance. The most likely eligible groups are:

- *Private Landowners*: Persons who have legal rights to the affected lands and other assets, such as houses/structures, trees, etc. built and grown on them. Compensation will be at replacement cost for loss of lands and additional transitional allowance when the loss is more than 20% of landholding or the remaining land is not economically viable for current use.
- *Squatters*: Persons/households who do not have legal rights to the affected lands, but use them for residential and livelihood purposes constructing structures on the lands. "Squatters" are persons who occupy/possess an asset without legal title. Squatters will not be entitled for compensation for lands but the structures and assets developed on it. They will be entitled for relocation and livelihood restoration assistance in addition to compensation for structures following the entitlement matrix.
- *Encroachers*: Persons/households who do not have legal rights to the affected lands attached to their own titled land, but encroach them for agricultural or other productive purpose with or without any construction. "Encroachers" are those owners of land adjacent to public property, who have illegally extended their land holdings or structures into public land. Like the squatters, the encroachers will not be entitled for compensation for lands but the structures and assets developed on it. They will be entitled for relocation and livelihood restoration assistance in addition to compensation for structures following the entitlement matrix.
- *Tenants/Lease holder (Public or private land)*: Persons/households who do not have legal title to the affected lands but rent or lease it in for agricultural, residential or commercial purposes. Compensation will be replacement value of gross harvest for one year (for agriculture land) or the remaining lease period whichever is higher. In case of commercial and residential lands, the compensation will be equivalent to three months' rent or for the remaining lease period, whichever is higher.
- *Tenants of affected structures*: Persons/households renting in affected structures for residential or commercial use. Affected tenants of structures will be assisted with cash compensation equivalent to 3 months' rent of the affected structure, transfer/shifting allowance and in finding out alternative rental accommodation.
- *Market traders/shop owners*: Affected shop owners and operators displaced due to undertaking of project works. Compensation will be transition allowance for the permanent loss of business, incomes & wages equivalent to the loss of income/wages for a period of 3 months for each affected members of households. In case of temporary relocation and

temporary loss of business incomes, compensation will be wages equivalent to closure period OR alternative business site for continued income stream.

Compensation/Assistance Principles

Depending on an affected person's preference, the contractor/implementing agency may consider using both financial and material forms of compensation and assistance. The contractor will ensure delivery of the agreed compensation/assistance in a timely and transparent manner. Compensation for the affected assets will be according to the following principles:

- Replacement cost for an equal amount of land of same productive quality.
- Replacement cost of houses/structures at the current prices of same building materials, plus the current cost of labor to build them. Depreciation and value of the salvageable building materials will not be deducted while computing the compensation.
- Current market prices of trees that are to be felled (owners will retain ownership of un-felled trees).
- Compensation in cash will be made in public.

Consultation

Consultations will be inclusive of all stakeholders and used as a two- way communication strategy to provide information about the project and solicit support and agreements on the mitigations proposed. In addition to general consultation about the benefits and feasibility of specific physical activity, the contractor/implementing agency will make certain that the users of the required lands (with and without legal rights) are consulted very early in the subproject preparation process. Consultations will focus on the issue of land availability and the conditions under which they could be used for subprojects. In cases where the would-be affected persons are tribal or women, the contractor/ implementing agency will arrange culturally appropriate or separate consultations. Community consultation process during project implementation is discussed in more detail at Annex 9.

The contractor will prepare consultations minutes, indicating dates, venues, compensation issues discussed, and the details of the agreements reached. The affected persons will be provided with copies of the minutes signed by the affected persons. Copies of all such signed minutes will be kept by the contractor/implementing agency and will be made available for review by the World Bank.

Land Acquisition Process

The contractor/implementing agency with the assistance of the consultant (if required) will prepare land acquisition proposals when exact ground locations of the required lands will be identified. The acquisition will be decided once the other options for alternative lands and direct purchase fail. The land acquisition proposal will include a land plan with layout of subproject design on cadastral maps,

land schedule determining the amount of land, and other supporting documents as per requirement of the Deputy Commissioner's (DC) land acquisition (LA) section. The DC's LA section will process and complete land acquisition in favor of the contractor/implementing agency. The DC will assess the quantity of assets to be acquired and determine market price of the land and assets on it and prepare budget for compensation under law with 50% premium on the market prices (in Bangladesh). However, the contractor/implementing agency will place funds with the DC within 60 days of fund request. The DC will make compensation payment in another 60 days to complete the land acquisition.

Preparation of Subproject RAP

The contractor/implementing agency will carry out Inventory of Losses (IoL) and census of affected persons and establish cut-off date for recognition of structures for compensation and assistance. Temporary or permanent displacement of traders for project works, temporary/permanent income losses, temporary/permanent damages to property and assets will be included in the census. The screening and subsequent identification/consultation with stakeholders will be the cut-off date for recognizing losses for resettlement assistance.

The contractor/implementing agency and/or a consultant hired by them and the landowners will jointly determine the replacement costs of land based on the most recent transactions made in the same or adjacent localities, in view of the land type, productive quality and accessibility. Current prices of other assets, such as building materials, trees, etc. will be in accord with those in the local markets. The valuation process has been discussed in more detail at Annex 10

Following the SIA, Census of affected persons and joint verification data available from the DC, the contractor/implementing agency will prepare RAP for the subproject following this ESMF. A typical RAP will contain information, on the amount of land required from private and public ownerships, details of the impacts/losses and the number of landowners and other being affected, the alternatives considered to minimize displacement, review of the application of legal and policy framework, mitigation measures and an entitlement matrix, detailed budget, time schedule, arrangement for implementation and monitoring and evaluation. The RAP preparation process will seek active participation of the communities. Eligibility and entitlement matrixes and outlines of RAP are given below. The contractor/implementing agency will document the impacts and affected persons/households, mitigation measures agreed with them, and verifiable evidence that the agreed measures have been implemented. Direct purchase cases will also be documented with appropriate evidence and will remain open to verification by the World Bank.

Suggested Methods for Market Price Surveys

In line with the proposed compensation principles, the contractor/implementing agency assisted by the consultants (if required), will conduct market price surveys to determine the replacement costs of acquired lands, houses/structures and other replaceable assets and market prices of irreplaceable assets by using the methods suggested below.

Lands of All Kinds

The surveys will explicitly take into account the quality of the lands under acquisition. Quality will take into account current uses, cropping intensity and value of crops produced, accessibility from the existing roads, and any other characteristics that influence the lands' market value. The survey will be conducted on the following three groups of respondents:

- A random sample of 10-15 landowners in the locality in which a subproject is located and in those adjacent to it;
- Deed writers, as many can be found and agree for interviews, at the land registration offices, who recently handled transactions in the same or adjacent village/locality. (They will be asked about the actual prices, not those written in the deeds.)

Market value of the lands will be determined in the following manners:

- If variations in average prices reported by the respondent groups are insignificant (or, are 10% or less), current value of the land will be fixed at the average of the prices reported by the three groups.
- In cases of significant differences (more than 10%), the current price will be negotiated in open consultations with the affected and other landowners, community leaders, CBOs/NGOs and the like.

Replacement cost will equal the market value, plus the registration cost or stamp duty. The registration cost will be calculated on the current market price.

Houses and Other Built Structures

Replacement costs will be based on the current prices of various building materials, labor and other cost items in the local markets. The costs of building materials, such as bricks, cement, steel, sand, bamboo, timber, GI sheet, roofing materials like straw, golpata, etc, and labor will be based on:

- Survey of current prices of different types of materials with five or so dealers/manufacturers in the local markets.
- The replacement cost of the house/structure will be based on the lowest quoted price for each type of material, plus their carrying costs to the sites.
- The current costs of labor with different skills will be determined by interviewing local contractors, engineers, and local construction workers.

Replacement costs of any other items will be determined based on the current prices of materials, labor, etc.

Trees & Other Irreplaceable Assets

Current market price of trees will be determined based on (a) Net Present Value or (b) Current age, life span, productivity and current market price of output. Market prices of different varieties of trees will be determined by surveying the prevailing prices paid by five or so timber and fuel-wood traders in the local markets. The compensation for trees will be fixed at the highest prices offered by a trader.
Compensation for all other irreplaceable assets will also be based on survey of their prevailing prices with dealers/traders in the local markets.

Fruits and Other Crops

Compensation will be fixed at the harvest prices of the fruits and other crops. Harvest prices of different varieties of fruits and crops will be collected from a sample of 7-10 dealers in the local markets. The compensation for each type of fruit and crop will be fixed at the highest price offered by trader.

The market price surveys will begin as soon as locations of the required acquisitions (or lands obtained through other means) are identified on the ground. The contractor/implementing agency will document the replacement costs and market prices of various affected assets and make them available as and when asked for review by WB.

Implementation of RAP

The contractor/implementing agency will forward the subproject RAP (where required) for review and approval from the Bank before allowing on-site implementation. The contractor upon approval from the Bank and the relevant government agency/agencies will implement the RAP with assistance from consultants if needed. Individual payment plan will be prepared for each affected persons and mitigation plans and all declarations and agreements as per ESMF will be executed before taking over lands, affecting/removing structures, affecting livelihoods and incomes etc.

Compensation and Entitlement Matrixes

Table 6: Compensation & Entitlement Matrixes

Type of Impact	Application	Eligibility	Compensation/Entitlement
Arable land (public and private)	Less than 20% of land holding lost, the remaining land	Titleholder (private)	• Cash compensation for lost land at replacement cost.

	is economically viable		
	More than 20% of land holding lost OR where less than 20% holding lost but the remaining land becomes economically unviable	Titleholder (private)	● Cash compensation at replacement cost. ● Transition allowance equivalent to one year's cash return from the land.
		Tenant/lease holder (private /public)	● Cash compensation equivalent to the replacement value of gross harvest for one year or for the remaining period of tenancy agreement, whichever is greater.
		Agricultural labor (private/ public)	● Cash compensation equivalent to 6 months' wage and assistance in getting alternative employment.
		Squatter/ encroacher (private / public)	● Relocation assistance equivalent to one year's cash return from the land they occupy.
Residential/ commercial land (public and private)	Less than 20% of land holding lost and remaining land viable for present use	Titleholder (private)	● Compensation in cash at replacement cost. ● Relocation assistance. ● Restoration of pre-acquisition basic utilities (water supply & sanitation, electricity, etc.)
	More than 20% holding affected OR where less than 20% holding affected but the remaining area becomes smaller than minimally accepted under the zoning laws and unviable for	Titleholder (private)	● Compensation at replacement cost. ● Transition allowance equivalent to one year's return from the land ● Relocation assistance. ● Restoration of pre-acquisition basic utilities (water supply & sanitation, electricity, etc.)
		Tenant/ leaseholders (private / public)	● Cash compensation equivalent to three months rent or for the remaining period of tenancy/lease agreement, whichever is greater.
Structures on acquired land or affected on existing land vacated for project	Structures partially affected but the remaining structure viable for continued use.	Owner with valid title to land or with valid lease	● Compensation in cash for affected portion of the structure and other fixed assets at replacement cost, and ● Assistance in restoration of the remaining structure

purpose (permanently or temporarily)		deed for the land	● Repair Allowance, minimum 20% of Compensation
		Squatters	● Compensation in cash for affected portion of the structure ● Transfer/shifting allowance. ● Transition allowance for three months' equivalent to the rent of similar structure in the same vicinity.
		Tenants	● Cash compensation equivalent to 3 months' rental allowance ● Transfer/shifting allowance ● Assistance in identifying alternate rental accommodation.
		Encroachers	● Early notice on the demolition ● Technical advice in demolition, relocation and repairing of affected structure ● Payment for repairing only those damages to structure resulting from demolition, if required ● Transfer/shifting allowances, if required ● Transition allowance for three months' equivalent to the rent of similar structure in the same vicinity.
	Entire structure affected OR where structures partially affected such that the remaining structure is unviable for continued use.	Owner with valid title to land or with valid lease deed for the land	● Compensation in cash for entire affected structure and other fixed assets (wells, electric and water connections, etc.) at replacement cost, without depreciation. ● Transfer/shifting allowance. ● Transition allowance for three months' equivalent to the rent of similar structure in the same vicinity.
		Tenant	● Cash compensation equivalent to 3 months' rental allowance ● Transfer/shifting allowance ● Assistance in alternate rental accommodation.
		Squatters	● Compensation in cash for affected structure ● Transfer/Shifting allowance

			● Transition allowance for three months' equivalent to the rent of similar structure in the same vicinity. ● Early notice for eviction and demolition ● Technical advice in demolition or repairing of affected structures
		Encroachers	● Early notice on the demolition before no less than 60 days. ● Technical advice in demolition, relocation and repairing of affected structure ● Payment for repairing only those damages to structure resulting from demolition, if required ● Transfer/shifting allowances ● Transition allowance for three months' equivalent to the rent of similar structure in the same vicinity.
	Affected female headed household	Female head of household (titled or non-titled-squatters and encroachers)	● Female headed household affected with structures will be entitled for additional financial assistance equivalent to 3 months' subsistence cost for the incumbent household.
Loss of business /income or employment due to displacement	Temporary or permanent los of business/incomes/ employment	Affected individuals (titled/non-titled)	● Employment in reconstructed enterprise or package for re-employment or starting business for affected employee. ● Transition allowance for the permanent loss of business, incomes &wages equivalent to the loss of income/wages for a period of 6 months for each affected member of households. ● In case of temporary relocation and temporary loss of business incomes, compensation will be wages equivalent to closure period OR Alternative

			business site for continued income stream. ● Re-allocation of market corners or shops after construction to the original market trader.
Standing crops on affected lands	Crops affected by land acquisition or temporary acquisition/ easement	Owner of affected crops (titled/non-titled)	● Compensation in cash at market value.
Trees on affected lands	Trees lost	Owner of affected trees (titled/non-titled)	● Compensation in cash calculated on the basis of type, age and productive value of affected trees.
Loss of public infrastructure	Infrastructure (electric water supply, sewerage & telephone lines; public health center; public water tanks)	Relevant agencies.	● Compensation in cash at replacement cost to respective agencies or restoration of affected assets.
Unforeseen Losses	As identified	As identified	● Appropriate mitigation measures as determined to meet the objectives of this policy framework

Outline of Resettlement Action Plan (RAP)

Table 7: Outline of RAP

Project Background	Brief introduction about the project, description of project interventions and areas of jurisdiction of The contractor, description of project components causing land acquisition and resettlement, scope of land acquisition and resettlement, an account of the alternatives considered to avoid and/or minimize the adverse impacts
Census and Socioeconomic Surveys	Identify all categories of PAP and their vulnerability, identify all categories of impacts (loss of property and assets, loss of livelihood; impacts on groups and communities, impact on physical cultural resources) An account of impacts by gender and vulnerability due to project and the special assistance that is to be provided

Participation and Consultation	An account of the disclosure of SMF and consultations with the project affected people/households about the mitigation measures and implementation procedure;
Legal and policy framework	Analysis of the legal framework for compensation, applicable legal and administrative procedures, gaps between local laws and the Bank's resettlement policy, and the mechanisms to bridge such gaps;
Compensation Entitlements	Description of compensation and other resettlement assistance that will be provided according to the principles and guidelines adopted in this SMF;
Relocation and Livelihood Restoration	Description of resettlement sites and programs for improvement or restoration of livelihoods and standards of living
Grievance redress mechanism	Describe specific arrangement and procedure for receiving and resolution of complaints and grievances from the PAP and their community
Resettlement Budget	Resettlement budget with breakdowns by loss categories and the number of persons entitled to compensation/assistance Specific compensation rates and standard of entitlements and EPs/households for different types of losses Fund flow and disbursement procedures
Implementation Arrangement	Institutional arrangement and management of preparation and implementation of resettlement activities, grievance resolution, property assessment and valuation, and implementation time schedule
Monitoring and Evaluation	Describe monitoring arrangement involving PMO and The contractor and mechanism for independent review and evaluation as well as reporting

Table 8: Abbreviated RAP

Project Background and Impacts	Description of project interventions, assessment of land needs (private and public lands, including The contractor own) for the civil works in each polder, screening of physical cultural resources, a census survey of PAP, and valuation of the affected assets;
Legal and policy framework	Analysis of the legal framework for compensation, applicable legal and administrative procedures, gaps between local laws and the Bank's resettlement policy, and the mechanisms to bridge such gaps;
Compensation Entitlements	Description of compensation and other resettlement assistance that will be provided according to the principles and guidelines adopted in this SMF;

Participation and Consultation	An account of the consultations with the displaced persons/households about acceptable alternatives;
Grievance redress Mechanism	Describe specific arrangement and procedure for receiving and resolution of complaints and grievances from the PAP and their community
Budget and Implementation Schedule	A resettlement budget with breakdowns by loss categories and the number of persons entitled to compensation/assistance, and an implementation schedule;
Monitoring and Evaluation	Describe monitoring arrangement involving PMO and The contractor and mechanism for independent review and evaluation as well as reporting

INDIGENOUS/TRIBAL PEOPLES FRAMEWORK

Guidance on Preparing Indigenous/Tribal People's Plan

The general sub-project areas in Bangladesh and India may have small concentration of tribal inhabitants, whereas the sub-project areas on the Bhutan side do not have presence of any indigenous people. OP 4.10 is triggered when a project engages with, touches on or impacts tribal people in any way, positive or negative. Detail guidelines have been prepared for preparation of TPP, following the World Bank's Operational Policy on Indigenous Peoples (OP 4.10), to mitigate any negative impacts on indigenous/tribal people and maximize benefits to them.

1. Objectives of the Tribal Peoples Plan

Depending on the presence of tribal peoples (TP) in the subproject areas, the contractor/implementing agency will prepare their subprojects with the following strategic objectives:

- Select subproject interventions and determine their scopes to avoid adverse impacts on tribal peoples as far as possible.
- Ensure free, prior and informed consultation with the tribal peoples where subproject identifies tribal peoples among the affected/beneficiaries.
- Ensure project benefits are accessible to the tribal community living in the subproject area.
- Ensure tribal peoples participation in the entire process of identification, planning, and implementation of subprojects.
- Wherever possible, adopt measures to reinforce and promote any available opportunities for socioeconomic development of the tribal communities.

2. Identifying the I/TPs

Although the indigenous/tribal peoples in Bangladesh and India are well recognized locally, the contractor/implementing agency will examine the following characteristics to make formal identification:

- Self-identification as members of a distinct tribal cultural group and recognition of this identity by others;
- Collective attachment to geographically distinct habitats or ancestral territories in the subproject area and to the natural resources in these habitats and territories;
- Customary cultural, economic, social or political institutions that are separate from those of the dominant society and culture; and
- Tribal language, often different from the official language of the country or region.

3. I/TP Consultation Strategy

In order to hold free, prior and informed consultations, the contractor/implementing agency will provide I/TPs with all information related to the subproject interventions, need for lands, and intended benefits, including those on potential adverse impacts. They will also prepare a time-table for I/TP consultations leading to selection, design and implementation of the subprojects, and consult them in manners so that they can express their views and preferences freely.

In addition to the communities in general, consult TP organizations, community elders/leaders and others with adequate gender and generational representation; and civil society organizations like NGOs and groups knowledgeable of I/TP issues. In addition to the choice of alternative subproject design and locations, consultations will concentrate on the adverse impacts, if any, perceived ways to avoid those impacts, as well as exploring additional development activities that could be promoted under the subproject. This will provide the inputs necessary to prepare and implement a TPP for a subproject in an area inhabited tribal peoples. The contractor will keep minutes of these consultation meetings and make them available for review by the World Bank and other interested groups and persons.

4. Preparation of an I/TPP

In order to prepare an I/TPP, the following steps will be taken:

- Social screening to establish the presence of I/TPs in the subproject area
- Based on a detailed social assessment establish a socioeconomic baseline data on the I/TPs in the subproject area
- Review laws and policy guidelines applicable to the I/TPs communities
- Demonstrate measures to avoid negative impacts to the I/TPs
- Identify areas for improvement of indigenous/tribal settlement and extending benefits of the subproject to them
- Disclose and implement the I/TPP locally and in Bank Infoshop before award of project works contract.

The I/TPP will primarily aim at avoid potential adverse impacts, and reinforcing and promoting any existing opportunities. The TPP will basically consist of TP profile and baseline information, consultation and participation strategy, benefits enhancement measures, implementation arrangement

including institutional and financial and a monitoring and evaluation plan. The draft outline of the I/TPP is given below.

Table 9: Outline of Tribal People's Plan

Baseline and TP Profile	Baseline data, including analysis of cultural characteristics, social structure and economic activities, land tenure, customary rights to common property resources, relationship with the local mainstream peoples, occupation, language skills, costumes, etc.
Participation Strategy	Process and timing of consultation and the participants such as I/TP community leaders, elders, community based TP organizations, NGOs, individuals, generational representatives, feedback
Subproject benefits and enhancement areas	Identify subproject benefits to the TP communities and the areas where the benefits can be enhanced
Gender Strategy	Identify gender issues and consult with women in separate groups to understand their needs and priorities. Incorporate feedback into project design
Enhancement measures and activities	Identify TP preferences and priorities, develop enhancement measures agreed with the communities
Implementation Arrangements	Describe responsibilities for implementation of the enhancement measures including The contractor, TP communities, consultants with time schedule, costing and sources of financing
Monitoring and Evaluation	Design monitoring and evaluation plan involving the TP communities, the consultants and the contractor

GRIEVANCE RESPONSE MECHANISM (GRM)

The Grievance Redress Mechanism will follow the same principles and guidance provided in the overall ESMF for package one. However, the institutional arrangements and specifics for this cannot be defined at this stage as the contractor/Implementing agency for package two is not known. The contractor/implementing agency will provide these sections in a well-defined manner in the above mentioned plans to be prepared based on this ESMF.

Annex 1: Environmental and Social Screening Form

The following form should be included in the Project's Implementation Manual.

Fiber optic location (include map/sketch):	*(e.g., districts).*
Type of activity :	*(e.g., new construction, rehabilitation, periodic maintenance)*
Estimated Cost:	
Proposed date of commencement of work:	
Technical drawing/specifications reviewed :	*(circle answer): Yes No*

This report is to be kept short and concise.

Checklist questions*:*

Physical data:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
Site area in square meters	
Extension of or changes to existing alignment	
Any existing property to transfer to project	
Any plans for new construction	
Preliminary Environmental Information:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
State the source of information available at this stage (i.e., Service Provider's report, or other environmental study).	
Has there been litigation or complaints of any environmental nature directed against the Contractor/Vendor	

Refer to Annex 2, ESMF content (section 3) or relevant environmental authority for this information.

Identify type of activities and likely environmental impacts:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*

What are the likely environmental impacts, opportunities, risks, and liabilities associated with the project subcomponent?	

Refer to ESMF – Impact, Mitigation, and Monitoring Guidelines

Determine environmental screening category:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
After compiling the above, determine which environmental category the project falls under based on the risk profile.	

Refer to ESMF– Screening and Review Process

Mitigation of Potential Pollution:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
Does the project have the potential to pollute the environment or contravene any environmental laws and regulations?	
Does the design adequately detail mitigating measures?	

Refer to ESMF– Impact, Mitigation and Monitoring Guidelines

Environmental Assessment Report or environmental studies required:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
Required Environmental Management Plan (EMP):	
If the screening identifies environmental issues that require long-term or intermittent monitoring (e.g., effluent, gaseous discharges, water quality, soil quality, air quality, noise), does the proposal detail adequate monitoring requirements?	

Refer to ESMF – Impact, Mitigation, and Monitoring Guidelines

Public participation/information requirements:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
Does the proposal require, under national or local laws, the public to be informed, consulted, or involved?	
Has community outreach been completed?	
If so, has the safeguard focal point of the service provider participated in the community outreach?	
Has the short report of community outreach been developed and filed?	
Did local people who participated in community outreach express their support to the project subcomponent?	
Indicate the time frame of any outstanding consultation process.	

Land and resettlement:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.* *Some questions may only be confirmed during field appraisal*
Does the project need any non-governmental land to house infrastructure?	
Will the land be leased from private entities?	
If so, how large is the size of land needed? Any infrastructure need land > 200m2 per site?	
Does someone need to physically relocate in order to implement the project?	
Is land lease contract already in place and adequately address all aspects provided in the sample lease agreements attached to the ESMF?	
Is the lease agreement legally valid and enforceable?	
Is the lease agreement signed by the land owner/ occupants?	
Do the land owners/ users clearly understand the terms of lease agreement?	
Are the lease fees reasonable?	
Are the land owner/ users willing to lease the land	

Does anyone have recognizable (even if not fully legal) pre-existing claims to the land where infrastructure will be housed?	
Is tenure/ titles of the land where infrastructure will be built legal and solid?	
Is there an easy and secure means of communication that allows land owners/ users and the service providers to contact each other?	
Does the lease agreement include contact information of land owners and can they be reached and confirm their informed consent to lease agreement?	
Will anyone other than the formal land owner/occupant use the land for livelihood?	
Will anyone lose significant livelihood (e.g. more than 10% of cash and non-cash income) as a result of the land lease, and if so, roughly how many are they?	
Will the construction of infrastructure in the identified sites affect the livelihood of local people?	
Do land owners/ users reside within the service area of the ICT connectivity project.	
Who will monitor the implementation of lease contract?	

Recommendations:

☐ Requires EMP/ECOP, to be submitted on date:.

☐ Does not require further environmental studies

Reviewer :	
Name:	
Signature :	
Date:	

Annex 2: Environmental Code of Practice (ECOP)

This is designed to serve as a code of practice to contractors and vendors to avoid, minimize, and mitigate potential environmental and social impacts caused by the ICT Connectivity subcomponent of the project, during both its build-out and operation, and maintenance phases.

It covers the following areas:

- Management measures for preventing, minimizing, and mitigating potential environmental, health, and safety impacts associated with the telecommunications sector (i.e., impacts to natural habitat);
- Management of the telecommunications facilities and their potential effects on the environment (i.e., air emissions, hazardous materials management, and waste); and
- An overview of the potential risks of electromagnetic waves to human health.

Telecommunications Infrastructure

Fiber Optic Networks

No sites and land will be acquired, no land will be cleared of trees. All fiber optic networks will be established along existing BPC transmission networks.

Co-location/Sharing and Siting of International Gateway.

The international gateway will be established in Samdrupjongkhar at either the BPC or Bhutan Telecom premises.

Environmental Impacts

Protected Areas

Fiber optic networks will be laid on the existing BPC network and will not be contructed from scratch in natural protected areas

Renovation of Roads/ trails

Since no new networks are being developed, existing road/ trail infrastructure will not be build nor repaired.

Noise

Backup power generators are the main source of noise of telecommunications networks. Noise pollution can be minimized by locating the equipment in nonresidential areas and using noise suppression shields and mufflers.

Occupational Health and Safety (OHS)

Occupational health and safety hazards may occur during minor civil works construction and will be carefully managed. The occupational health and safety hazards include the following:

- Elevated and overhead work
- Fall protection
- Confined space entry
- Motor vehicle safety

In particular, prevention and control measures must ensure that only trained and certified workers access the facilities or any area that could present occupational health and safety hazards, with the necessary safety devices and respect for minimum setback distances. Injuries related to electric shock should also be prevented, minimized, and contained.

Construction activities and environmental rules for contractors

The following information is intended solely as broad guidance to be used in conjunction with local and national regulations. Based on this information, environmental rules for contractors should be developed for each project area.

The following rules (including specific prohibitions and construction management measures) should be incorporated into all relevant bidding documents, contracts, and work orders.

Prohibitions

The following activities are prohibited on or near the project site:

- Cutting of trees for any reason outside the approved construction area;
- Hunting, fishing, wildlife capture, or plant collection;
- Use of unapproved toxic materials, including lead-based paints and asbestos;
- Disturbance to anything with architectural or historical value;
- Use of open fires at the site;
- Use of firearms (except authorized security guards); and
- Use of alcohol by workers.

Construction Management Measures

Waste Management and Erosion:
Solid, sanitation, and hazardous wastes must be properly controlled through the implementation of the following measures:

Waste (including hazardous waste) Management:

- Minimize the production of waste that must be treated or eliminated.
- Identify and classify the type of waste generated. If hazardous wastes (including healthcare wastes) are generated, proper procedures must be taken regarding their storage, collection, transportation, and disposal.
- Identify and demarcate disposal areas, clearly indicating the specific materials that can be deposited in each.
- Control placement of all construction waste (including earth cuts) to approved disposal sites (>300 m from rivers, streams, lakes, or wetlands). Dispose of all garbage, metals, used oils, and excess material generated during construction in authorized areas, incorporating recycling systems and material separation.

Maintenance:

- Identify and demarcate equipment maintenance areas (>15m from rivers, streams, lakes, or wetlands).
- Ensure that all equipment maintenance activities, including oil changes, are conducted within demarcated maintenance areas. Never dispose of spent oils on the ground, in watercourses, drainage canals, or sewer systems.
- Identify, demarcate, and enforce the use of within-site access routes to limit impacts to site vegetation.
- Install and maintain an adequate drainage system to prevent erosion on the site during and after construction.

Erosion Control

- Erect erosion control barriers around the perimeter of cuts, disposal pits, and roadways.
- Spray water on dirt roads, cuts, fill material, and stockpiled soil to reduce wind-induced erosion, as needed.
- Maintain vehicle speeds at or below 10 mph within work areas at all times.

Stockpiles and Borrow Pits

- Identify and demarcate locations for stockpiles and borrow pits, ensuring that they are 15 meters away from critical areas such as steep slopes, erosion-prone soils, and areas that drain directly into sensitive water bodies.
- Limit extraction of material to approved and demarcated borrow pits.

Site Cleanup

- Establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for construction debris.

Safety during Construction

The contractor's responsibilities include the protection of every person and nearby property from construction accidents. The contractor shall be responsible for complying with all national and local safety requirements and any other measures necessary to avoid accidents, including the following:

- Carefully and clearly mark pedestrian-safe access routes.

- If schoolchildren are in the vicinity, include traffic safety personnel to direct traffic during school hours.
- Maintain supply of supplies for traffic signs (e.g., paint, easel, signal material), road marking, and guardrails to maintain pedestrian safety during construction.
- Conduct safety training for construction workers prior to beginning work.
- Provide personal protective equipment and clothing (e.g., goggles, gloves, respirators, dust masks, hard hats, steel-toed and –shanked boots) for construction workers and enforce their use.
- Post Material Safety Data Sheets for each chemical present on the work site.
- Require that all workers read, or are read, all Material Safety Data Sheets. Clearly explain the risks to them and their partners, especially when pregnant or planning to start a family. Encourage workers to share the information with their physicians, when relevant.
- Ensure that the removal of asbestos-containing materials or other toxic substances be performed and disposed of by specially trained workers.
- During heavy rains or emergencies of any kind, suspend all work.

- Brace electrical and mechanical equipment to withstand seismic events during construction.

Nuisance and dust control

To control nuisance and dust the contractor should:

- Maintain all construction-related traffic at or below 15 mph on streets within 200 m of the site.
- Maintain all on-site vehicle speeds at or below 10 mph.
- To the extent possible, maintain noise levels associated with all machinery and equipment at or below 90 db.
- In sensitive areas (e.g., residential neighborhoods, hospitals, rest homes) stricter measures may need to be implemented to prevent undesirable noise levels.
- Minimize production of dust and particulate materials at all times to avoid impacts on surrounding families and businesses, especially to vulnerable people (i.e., children, elders).
- Phase removal of vegetation to prevent large areas from becoming exposed to wind.
- Place dust screens around construction areas, paying particular attention to areas close to housing, commercial areas, and recreational areas.
- Spray water as needed on dirt roads, cut areas and soil stockpiles or fill material.
- Apply proper measures to minimize disruptions from vibration or noise from construction activities.

Environmental Supervision during Construction

The bidding documents should indicate how compliance with environmental rules and design specifications would be supervised, along with penalties for non-compliance by contractors or workers. Construction supervision requires oversight of compliance with the manual and environmental specifications by the contractor or his designated environmental supervisor. Contractors are also required to comply with national and municipal regulations governing the environment, public health, and safety.

Annex 3: Appraisal, Approval and Monitoring Process if Project Subcomponent Requires an EMP

The Contractor/ Vendor implementing the ICT Connectivity subcomponent will submit a copy of the EMP to the relevant environmental authorities and to the implementing agencies (MOIC and DITT).

The objective of the EMP is to cater to the environmental and social needs of the project in a simple, responsive, and cost-effective manner that will not unnecessarily overload or impede the project cycle. The EMP should outline the measures needed to address the issues identified. Moreover, a good EMP should demonstrate that proposed monitoring activities will encompass all major impacts and identify how they will be integrated into project supervision in a feasible practical manner.

The EMP should be a simple 2-4 page document that outlines the following:

- Main environmental and social mitigation measures (following ECOPs)
- Environmental and social monitoring program(

This EMP should include the following:

Contents of an EMP

- Potential environmental and social impacts related to the ICT subcomponent of the project
- Mitigation and monitoring measures to address potential impacts;
- Responsibilities for monitoring EMP requirements;
- Training and capacity-building requirements for project officers; and
- Estimated budget for implementation and training.

The Contractor/Vendor is required to include environmental contract clauses in the technical specifications and account for these measures in the prohect implementation budget. *Annex 2 (ECOP)* provides a set of recommended contract clauses to include in contractor agreements. Usually, the environmental mitigation plan is part of the bidding documents.

Annual Monitoring Reports

Compliance monitoring comprises of a site-inspection of construction activities to verify that measures identified in the EMP are included in the clauses for contractors. This type of monitoring is similar to the normal tasks of a supervising engineer whose task is to ensure that the contractor achieves the required standards and quality of work.

Once implementation of the project subcomponent has started, regular supervisory missions should be carried out bu the Safeguards focal point at DITT and an annual monitoring report submitted to MOIC and to the World Bank for review.

The purpose of these reports is to provide:

- Implementation of EMP/ECOP;

- A record of experience and issues from the Project that can be used to identify difficulties and improve performance; and
- Practical information for undertaking an annual review.

Annex 4: Format of an Annual Environmental Report

Relevant authority:							
Reporting dates:							
District:							
Project approved:							
Project title	***Activities***	***Project phase*** [1]	***Env. category***	***EMP completed?***	***Env. Permit granted?***	***Effectiveness of EMP***	***Issues*** [2]
(name, location, title, or reference)	*(new construction, rehabilitation, maintenance)*	*See note below*	*(B or C)*	*Yes, No, or N/A*	*Yes, No, or N/A*	*Good, poor, or needs improvement*	*See note below*
1							
2							
3							
etc							
Note (1) phase will be one of the following: (a) under preparation or appraisal; (b) appraised; or (c) implementation *Note (2) Issues: accidents, litigation, complaints, or fines to be listed.* *Note (3) For example, if an environmental permit was not granted, explain why.*							

Annex 5: Content of an EMP

The EMP should be easy to use. References within the plan should be clearly and readily identifiable. Also, the main text of the EMP needs to be kept as clear and concise as possible, with detailed information relegated to annexes. The following aspects should typically be addressed within EMPs.

Summary of impacts: The predicted adverse environmental and social impacts for which mitigation is required should be identified and briefly summarized. Cross-referencing to other documentation is recommended so that additional details can be readily referenced.

Description of mitigation measures: The EMP identifies feasible and cost-effective measures to reduce potentially significant adverse environmental and social impacts to acceptable levels. Each mitigation measure should be briefly described with reference to the impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies). These should be accompanied by, or referenced to, designs, equipment descriptions, and operating procedures that elaborate on the technical aspects of implementing the various measures. Where mitigation measures may result in secondary impacts, their significance should be evaluated.

Description of monitoring program: Environmental performance monitoring should be designed to ensure that mitigation measures are implemented and have the intended result, and that remedial measures are undertaken if mitigation measures are inadequate or the impacts were underestimated. It should also assess compliance with national standards and World Bank Group requirements or guidelines.

The monitoring program should clearly indicate the linkages between impacts identified in the ESMF report, indicators to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions. Although it is not essential to have complete details of monitoring in the EMP, it should describe the means by which final monitoring arrangements will be agreed.

Institutional arrangements: Responsibilities for mitigation and monitoring should be clearly defined. The EMP should identify arrangements for coordination between the various actors responsible for mitigation.

Environmental Management Plan

A. Mitigation

Project Activity	**Potential Environmental and Social Impacts**	**Proposed Mitigation Measure(s)** (including legislation and regulations)	Institutional Responsibilities (including enforcement and coordination)	**Cost Estima**
Pre-Constructio n Phase				
Construction Phase				
Operation and Maintenance Phase				

B. Monitoring

Proposed Mitigation Measure	**Parameters To be Monitored**	**Location**	**Measurements** (including methods and equipment)	**Frequency of Measurement**	**Responsibilities** (including review reporting)
Pre-Construction Phase					
Construction Phase					
Operation and Maintenance Phase					
Total Cost for all Phases					

C. Institutional Strengthening and Training for Implementation

I. Institutional Strengthening Activity	**Position(s)** (Institutions, contractors, construction supervision consultants)	**Scheduling**	**Responsibilities**	**Co Est**
Mitigation Measures				
Monitoring Requirements (including compliance)				
II. Training Activity	**Participants**	**Types of Training**	**Content (modules, etc.)**	**Sch**
EMP Implementation, Re-design, Conflict Resolution				
Environmental Processes, Methods, and Equipment				
Environmental Policies and Programs				

D. Scheduling and Reporting

	Year 1				**Year 2**			
Activity	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Mitigation Measures **----------** **----------**								
Monitoring **----------** **----------**								

Institutional Strengthening **----------** **----------**									
Training **----------** **----------**									

MONITORING PLAN						
Phase	**What** (Is the parameter to be monitored?)	**Where** (Is the parameter to be monitored?)	**How** (Is the parameter to be monitored?)	**When** (Define the frequency / or continuous?)	**Why** (Is the parameter being monitored?)	i
During activity **preparation**						
During activity **implementation**						
During activity **supervision**						

Annex 6: SUB-PROJECT DESCRIPTION: OPTICAL FIBER LINE

(to be completed by the contractor/implementing agency)

(1) Name of Optical Fiber Line Subproject :

(2) (a) Total Length (km) :

(b) Type of Line : □ Underground □ Overhead

(c) Start/ End Point :

(d) Number of Stations to be constructed :

(3) Local contractor office :

(4) Layout of proposed Line :

(attach layout map)

(5) Ownership of sub-project land :

(a) Government owned :

(b) Private land (need acquisition) (acre)

: (c) Partly private/Partly Government owned

:

(6) Brief information of surrounding environment along line influence area[1]:

(a) Characteristics of route of optical fiber line:

….. % paddy/crop field; ….. % along road/highway; ….. % village/human settlement;

….. % industrial area; ….. % forest; ….. % wetland/river; ….. % other (specify)

(b) Brief Information on human settlement, industrial/commercial establishments, tribal people, water body, flora, fauna, historical or culturally important sites, ecologically sensitive areas, traffic

(7) Key activities of sub-project :

(8) Estimated cost of sub-project :

(9) Schedule of implementation:

(a) Sub-project duration (months) (b)
Tentative start date (c)
Tentative completion date

Prepared by: (Name, designation, mobile number, signature, date) ----------

Reviewed by: (Name, designation, mobile number, signature, date)----------

Annex 7: ENVIRONMENTAL/SOCIAL SCREENING: OPTICAL FIBER LINE

(to be completed by the contractor/implementing agency)

Name of Optical Fiber Line Subproject :
Total Length (km) :
Type of Line : □ Underground □ Overhead
Start/ End Point :
Local contractor/implementing agency office :

1) Potential Environmental Impact during Construction Phase:

(a) Ecological impacts:

• Felling of trees	Significant □	Moderate □	Minor □	Number of tress
• Clearing of vegetation	Significant □	Moderate □	Minor □	
• Potential impact on aquatic (i.e., water) habitat (esp. if power line is to be constructed over river/wetland)	Significant □	Moderate □	Minor □	

(b) Physicochemical impacts:

● Noise pollution	Significant □	Moderate □	Insignificant □
● Air pollution □	Significant □	Moderate □	Insignificant
● Water pollution □	Significant □	Moderate □	Insignificant
● Drainage congestion □	Significant □	Moderate □	Insignificant

(c) General Socio-economic impacts:

● Traffic Congestion	Very Likely □	Likely □	Unlikely □
● Health and Safety	Significant □	Moderate □	Insignificant □
● Impact on Archaeological & Historical	Significant □	Moderate □	Insignificant □
● Employment generation	Significant □	Moderate □	Insignificant □
● Significant □	Moderate □	Insignificant □	

2) Potential Environmental Impact during Operational Phase: No significant adverse impact anticipated that cannot be addressed by routine O&M activities, and no such impacts are expected that could potentially affect nature of subsequent ESA.

3) Summary of Possible social impacts of the subproject :

- Land acquisition:
- Land bought through direct purchase

Impacts on:

- Structures:
- Crops/trees:
- Common property resources:
- Access to the above:
- Livelihoods/source of income (temporary/permanent):
- Tenancy/rental/lease arrangements:
- Others:

4) Category of sub-project

According to WB classification : Category B

5) Proposed mitigation measure

6) Overall Comments:

Prepared by : (Name, designation, mobile number, signature, date) ----------

Reviewed by : (Name, designation, mobile number, signature, date)----------

Annex 8: FORM 3: ANALYSIS OF ALTERNATIVES: OPTICAL FIBER LINE

(to be completed by The contractor)

Name of Fiber Optic Line Sub-project
: Approximate Total Length (km) :
(could vary among alternative routes)
Type of Line : □ Underground □ Overhead
Start/ End Point :
The contractor office

(a) Analysis of alternative routes:

Note: The The contractor authority will identify alternative routes of the optical fiber line. Then the advantages and disadvantages of these alternatives will be listed in the following table. Important considerations include avoiding sensitive/physical cultural resources, private land, disruption of vendor activities as much as possible. Based on the assessment the relative advantages and disadvantages, a location for the sub-project will be proposed.

Alternative Routes	Advantages/ Considerations	Disadvantages/ Considerations

Proposed Route:

(b) Analysis of alternative technologies/designs:

Note: For underground lying of optical fiber lines, use of horizontal directional drilling (HDD) method may be adopted instead of traditional trenching operation for creating fewer disturbances in the surrounding

environment. Sometimes during bridge crossing HDD might be more advantageous to clamping or vice versa depending on distance and geological formations.

Technology/ Design Alternatives	Advantages	Disadvantages

Selected Technology/Design:

(c) No Sub-project Scenario: Briefly mention the difficulties the The contractor will face if the sub-project is not implemented

(d) Conclusion: On selected method/design/technology and route/location of subproject.

Annex 9: Scope of GRM

Suggestions and complaints to be addressed through GRM include, not limited to the following:

- Location/alignment of subproject interventions
- Use of additional private lands
- Temporary and permanent displacement of people
- Compensation and assistance issues against displacement of people
- Environmental concerns and construction safety
- Gender and vulnerability based discriminations
- Quality of works

All other complaints will be first dealt at the contractor/implementing agency level. If the contractor/implementing agency cannot resolve a specific complaint, they will be referred to the GRCs.

There will be two primary channels for an aggrieved person for lodging a complaint or sending a suggestion related to a subproject.

a) *Electronic submission*: The project will develop (i) an interactive complaint mechanism in the contractor/implementing agency websites and (ii) a valid email address of

the contractor/implementing agency up complaints lodged. In the website, there will be draw-down buttons with pop-up windows to launch a complaint. A complainant will receive a unique Case Number for future tracking.

b) *Paper-based submission*: This mechanism will provide a Drop Box, accept Postal mail and walk in submission to GRC secretariat or to the local The contractor representatives. Each complaint received will be assigned a unique Case Number so that the status of cases can be tracked. The contractor will operationalize the GRM channels at loan effect and the local The contractor will establish GRM focal points, GRC and channels for accepting suggestions and complaints at least 30 days before bidding process.

Step One: All complaints will first be received with the local the contractor/implementing agency. Their field level representatives will review and sort the cases in terms of nature of grievance and urgency of resolution. If the complaints are about any misconception or wrong understanding on policy and measures, they will clarify and if the aggrieved person is satisfied, will close the case at the entry level keeping a case record.

Step Two: The aggrieved persons may also lodge the complaints and send suggestions directly through postal mail, e-mail, websites or drop the written complaint in the contractor/implementing agency drop box.

Step Three: The complaints and suggestions received through various designated channels will be documented through paper-based registers and in computerized Data Bank with unique Case Numbers. The Member Secretary of the GRC will scrutinize the merits and produce the cases to the GRC's Monthly Sessions. Attendants, minutes of the meeting and the decisions will be instantly noted in the resolution book and entered into the GRM Databank with a resolution ID number. All complaints will be resolved in a maximum of 4 weeks after receiving the cases.
Step Four: If the resolution attempt at the local level fails, the GRC will refer the complaint with the minutes of the hearings to the PMU for further review. The Project Directors will make a decision and communicate it to the concerned GRC. The decisions on unresolved cases at this stage will be communicated to the GRC within one week of the complaint receipt.
A decision, agreed by the complainant at any stage of the GRM process, will be binding upon the contractor/implementing agency concerned.

GRM Documentation

To ensure impartiality and transparency, hearings on complaints at the GRC level will remain open to the public. The GRCs will record the details of the complaints and their resolution in a register, including intake details, resolution process and the closing procedures.

Grievance resolution will be a continuous process during subproject implementation. The contractor/implementing agency will keep records of all resolved and unresolved complaints and grievances (one file for each case record) and make them available for review as and when asked for by WB.

Annex 10: CHANCE FIND PROCEDURES

(Ref: The World Bank Operational Manual, 1999 OP4.11)

Works could impact sites of social, sacred, religious, or heritage value. "Chance find" procedures would apply when those sites are identified during the design phase or during the actual construction period and the related activity will not be eligible for financing under the project.

a) Cultural property includes monuments, structures, works of art, or sites of significant points of view, and are defined as sites and structures having archaeological, historical, architectural, or religious significance, and natural sites with cultural values. This includes cemeteries, graveyards and graves.
b) The list of negative subproject attributes which would make a subproject ineligible for support includes any activity that would adversely impact cultural property.
c) In the event of finding of properties of cultural value during construction, the following procedures for identification, protection from theft, and treatment of discovered artifacts should be followed and included in standard bidding document.
d) Stop the construction activities in the area of the chance find; (b) Delineate the discovered site or area;
e) Secure the site to prevent any damage or loss of removable objects.
f) Notify the supervisory Engineer who in turn will notify the responsible local authorities;
g) Responsible local authorities and the relevant Ministry would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures.
h) Decisions on how to handle the finding shall be taken by the responsible authorities and the relevant Ministry. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance), conservation, restoration and salvage.
i) Implementation of the authority decision concerning the management of the finding shall be communicated in writing by the relevant Ministry.
j) Construction work could resume only after permission is given from the responsible local authorities and the relevant Ministry concerning safeguard of the heritage.
k) These procedures must be referred to as standard provisions in construction contracts. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered.
l) Relevant findings will be recorded in World Bank Supervision Reports and Implementation Completion Reports will assess the overall effectiveness of the project's cultural property mitigation, management, and activities, as appropriate.

Annex 11: BEST MANAGEMENT PRACTICES (BMPS) FOR FIBER OPTIC CABLE INSTALLATION

The Best Management Practices (BMPs) are guidelines to reduce or eliminate environment risk due to various activities associated with the construction and installation of Fiber Optic Cable Lines of The contractor.

Best Management Practices (BMPs) related to the protection of flora and fauna:

1. Where stream crossings would include excavation or other activities that would result in suspended sediment, disturbance or modification of stream banks and beds, and/or removal of native riparian vegetation, measures will be employed to avoid or reduce the effect of these impacts.

2. Where the potential for suspended solids resuspension exists, monitoring for elevated turbidity levels will be planned, with contingencies in place to avoid elevated levels of suspended sediment that could result in adverse effect to sensitive aquatic species and other fish-bearing streams.

3. Removal of mature native riparian vegetation will be avoided, where avoidance is not possible, as few trees as possible will be removed to support the construction.

4. Where placement of cable or other infrastructure would result in removal of tree nests for migratory birds, surveys for all species of concern will be performed, and survey findings will be applied to include protective timing measures or other protections that ensure compliance with related local laws and guidelines.

5. Removal of trees needs to be avoided where such activities would result in mortality of eggs or nestlings or the abandonment of eggs and nestlings of birds

6. If sensitive plant species are found in the planning area while project activities are occurring, an ecologist would be consulted as to measures required to protect the species and its essential habitat. Also restrictions should be imposed on noise-generating activities and application of artificial lighting that disturbs sensitive species. If threatened or endangered species are affected due to project activities, appropriate measures should be taken for their rescue and relocation.

7. Tree felling, if unavoidable, shall be done only after compensatory plantation of at least three saplings for every tree cut is done.

8. The species shall be identified in consultation with officials of forest department/local community, giving due importance to local flora. It is recommended to plant mixed species in case of both avenue or cluster plantation.

9. The plantation strategy shall suggest the planting of fruit bearing trees and other suitable trees.

10. During the operational phase regular trimming of trees along the route of aerial installation of fiber optic cable line may become essential to prevent accidents due to over- growth onto the power lines. However, his activity should be conducted with minimal damage to the existing vegetation.

11. The project proponents would take up the planting of fruit bearing and other suitable trees, on both sides of the roads or other infrastructure development projects location from their own funds.

BMPs related to excavation, backfilling and topsoil restoration and re-vegetation:

12. Topsoil lift material would be replaced as the surface soil layer during backfilling. Excess subsoil, substrate, and/or large rock materials that cannot be buried in the excavated trench (trenching method) would be removed from the site.

13. Some compacting of backfill soil materials would be required while when closing trenched portions of the fiber optic line so as to eliminate excess soil settling. Backfilled sites should be mounded slightly at the completion of backfilling to accommodate for a reasonable amount of settling. Backfilling and compaction must be complete in all areas within 50 yards of road drainage culverts or natural channels before crews leave the job site for an extended period (weekend, holiday, etc.).

14. Restoration of topsoil will be required where soil is disturbed by project activities. The goal is to provide long-term soil cover and reduce the risk of weed infestation. Native plant materials are the first choice in revegetation, but non-native, non-invasive plant species may also be used. Prompt revegetation is critical to restoration of backfilled areas. Installation of native rather than imported plants will increase vegetation viability, avoid immediate- or long-term irrigation needs, and promote rapid ground cover. Plant diversity also will create useful wildlife habitat and more opportunities for future activities or site reuse.

15. If grass seed is not established within two years of initial seeding then reseed as necessary.

16. The topsoil salvaging provision applies to all areas along the proposed fiber line installation route where one or more of the following conditions exist: 1) trenching would be used for cable installation, 2) the fiber optic line would be buried in a borrow ditch or along other drainage features, 3) any areas where the fiber optic line passes through mature stands of conifers or deciduous trees, i.e.: areas obviously lacking previous disturbance. Topsoil salvaging would not be required in any areas where the soil surface is characterized as rubbly, extremely stony, or extremely bouldery based on the size and amount of rock fragments on the surface. Topsoil salvaging would also not be required in areas that are severely infested by noxious weeds or cheatgrass.

17. Drainage congestion may result from possible obstruction to natural flow of drainage water due to the storage of materials, digging/back-filling of water fiber optic line trenches. Therefore, care should be taken to avoid any drainage congestion during these activities.

BMPs related to reuse of excavated soil

18. Reusing excavated soil can be done from construction activities, where appropriate, to support similar construction development activities. This limits the need to import soil from natural or virgin sources. It also reduces the environmental impacts and costs associated with taking excess soils to commercial fill or landfill sites. All soils imported to a site for reuse should be of a quality appropriate for anticipated future land uses and to prevent adverse effects. Municipalities are encouraged to consider these soil reuse options in their procurement practices, and when issuing approvals or permits that include soil management and importation

BMPs related to protection of sensitive locations

19. At boundaries of sensitive areas (places of historical or archaeological importance), their buffers, and other areas stake or wire fences may be used to protect them from any harmful effects due to project activities. The fences will also assist in controlling vehicle access to and on these areas.

BMPs related to HDD operation

20. Directional Drilling equipment will be located outside of stream buffers – typically 20 feet or more from stream shore.

21. During directional boring operations the following mitigation measures may be adopted if seeping occurs:

    a. Containment and cleanup equipment will be present for use at the site, as needed
    b. If boring under stream crossings, a qualified hydrological monitor will be present at all bore sites to monitor construction activities for prompt detection of any releases.
    c. Releases will be immediately controlled and the drilling fluid will be contained and removed
    d. A remediation plan will be developed based on the site-specific conditions

22. Upon completion of a directional bore, all slurry will be removed from the construction site and deposited at an approved site.

BMPs related to Cable lying by bridge-crossing

23. Safety netting will be installed under aerial and bridge attachment installations over water bodies to avoid equipment, tools, or workers from falling into the water body

BMPs related to pole construction (Aerial installation of fiber optic cable line)

24. Erection of poles/towers for installation aerial fiber optic cable lines of the contractor involves:
    a. Informing the local community about the installation schedule;
    b. Marking and clearance of the designated locations for installation/replacement of poles.

25. Pole Erection Activities by The contractor
    a. Informing the community and local city/village councils about the likely schedule of erection;
    b. After obtaining the consent of the community The contractor shall be responsible to stake out the designated locations.

26. Pole Erection Activities by the Contractor
    a. The contractor shall submit the schedules and methods of operations for various items during the Pole erection operations to the The contractor for approval.
    b. The clearance of sites shall involve the removal of all materials such as trees, bushes, shrubs, stumps, roots, grass, weeds, part of topsoil and rubbish. Towards this end, the Contractor shall adopt the following measures:
        i. To minimize the adverse impact on flora and vegetation, only ground cover/shrubs that impinge directly on the permanent works shall be removed.

ii. In locations where erosion or sedimentation is likely to be a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion and sedimentation control features can follow immediately, if the project conditions permit.
iii. The disposal of wastes shall be in accordance with the provisions of BMPs related to Waste Management.

c. All regulatory clearances (including from WB) shall be obtained before actual start of work. River Crossing Towers are very high electric towers specially designed to cross large rivers. Tower construction for river crossing will require proper protective measures against bank collapse. Sheet-Piling or Shore protection measures should be ensured while laying the foundation of the tower near the river bank or in the river bed. Pre-cast piles should be driven in with extreme care so as to expose the workers to the least possible danger.
d. Foundation should be checked for damages or uneven settlement following construction.
e. Proper safety measures should be ensured prior to River crossing jobs.
f. The work plans should be submitted by the contractor/engineer prior to commencement of the erection work. The work plan should provide detailed steps of foundation works in the river. River traffic movement should not be obstructed t any stage.
g. Proper protective measures should be adopted to prevent or minimize river water pollution.

BMPs related to installation of control station for fiber optic line

27. The clearance of site shall involve the removal of all materials such as trees, bushes, shrubs, stumps, roots, grass, weeds, part of topsoil and rubbish. Towards this end, the Contractor shall adopt the following measures:
    a. To minimize the adverse impact on flora and vegetation, only ground cover/shrubs that impinge directly on the permanent works shall be removed.
    b. In locations where erosion or sedimentation is likely to be a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion and sedimentation control features can follow immediately, if the project conditions permit.
    c. The disposal of wastes shall be in accordance with the provisions of BMPs related to Waste Management.
    d. All regulatory clearances shall be obtained before actual start of work.

BMPs related to Waste Management

28. Construction Stage:
    a. The contractor shall either re-use or dispose the waste generated during construction depending upon the nature of waste.
    b. The contractor shall dispose off wastes that could not be re-used safely.

c. The contractor shall review the waste management practices adopted by the Contractor during the progress of construction.

29. Post-construction Stage
    a. In case of disposal of wastes on private land, certificate of Completion of Reclamation is to be obtained by the Contractor from the landowner that "the land is restored to his satisfaction".

BMPs related to Public Health and Safety

30. Pre-construction Phase
    a. In order to incorporate public health and safety concerns, The contractor and the Contractor shall disseminate the following information to the community:
        i. Location of project activities,
        ii. Borrow areas,
        iii. Extent of work
        iv. Time of construction
        v. Involvement of local labors in the road construction
        vi. Health issues - exposure to dust, communicable diseases etc.

31. Construction Phase
    a. The Contractor shall schedule the construction activities taking into consideration factors such as:
        i. Sowing of crops
        ii. Harvesting
        iii. Local hindrances such as festivals, etc.
        iv. Availability of labor during particular periods
    b. Proper safety/warning signs are to be installed by the contractor to inform the public of potential health and safety hazard situations during the construction phase in the vicinity of the project.
    c. The contractor shall carry out periodic inspections in order to ensure that all the measures are being undertaken as per this BMP.

32. Post-construction Phase
    The construction site shall be cleaned of all debris, scrap materials and machinery on completion of construction for the safety of public and users. During operation phase (especially during reglar maintenance) following issues should be addressed for overhead fiber optic cable lines:
    a. Regular patrolling along the overhead fiber optic cable lines to identify the need for regular and immediate maintenance operation.
    b. Inspection immediately after a major storm/rainfall event
    c. Regular cutting and trimming of trees around fiber optic cable lines.

BMPs related to Natural Habitats

33. General
    a. This code of practice envisages measures to be undertaken during implementation of the said projects by the The contractor near natural habitats. These measures shall be undertaken in addition to the measures laid down in the other BMPs.
    b. As per the World Bank OP 4.04, the conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. A precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development has been adopted for the project.

34. Pre-construction Phase
    Contractor in consultation with forest ranger or any other concerned authority shall prepare a schedule of construction within the natural habitat. Due consideration shall be given to the time of migration, time of crossing, breeding habits and any other special phenomena taking place in the area for the concerned flora or fauna.

35. Construction Phase
    a. Collection of any kind of construction material from within the natural habitat shall be strictly prohibited.
    b. Disposal of construction waste within the natural habitat shall be strictly prohibited.

36. Post-construction Phase
    a. The infrastructure development projects near the natural habitat shall be declared as a silence zone.
    b. Compensatory tree plantation within the project area shall be done.

BMPs related to Air Pollution Control

37. Field generation of contaminated or uncontaminated dust and mobilization of volatile organic compounds can be reduced by new and traditional BMPs such as: ▪ Covering excavated areas with biodegradable fabric that also can control erosion and serve as a substrate for favorable ecosystems, or with synthetic material that can be reused for other onsite or offsite purposes ▪ Spraying water in vulnerable areas, in conjunction with water conservation and runoff management techniques ▪ Securing and covering material in open trucks while hauling excavated material, and reusing the covers ▪ Revegetating excavated areas as quickly as possible ▪ Limiting onsite vehicle speeds to 10 miles per hour BMPs related to safety during fueling operations and cleaning of spills

38. Fueling of equipment is not to be done in close proximity to sensitive aquifers designated wetlands, wetland buffers, or other waters of the State.

39. The presence and constant observation/monitoring of the driver/operator at the fuel transfer location at all times will be implemented. Fueling will be located at least 25 feet from the nearest storm drain or covering the storm drain to ensure no inflow of spilled or leaked fuel.

40. The local fire department contact names and numbers will be on-site in case of any spill entering the surface or ground waters or in the event of fire.

41. Petroleum products will be stored in tightly sealed containers which are clearly marked.

42. All onsite vehicles will be checked for leaks and receive regular preventive maintenance to reduce the chance of leakage.

43. Manufacturer-recommended methods, materials, and equipment for spill cleanup will be available on site, and personnel will be made aware of the procedures and the location of the information and cleanup supplies.

44. All spills will be cleaned up immediately after discovery. Personnel will wear appropriate protective clothing to prevent contact with hazardous substances.

BMPs related to general maintenance and erosion control

45. When water or sediments are removed from vaults, inspect for the presence of oil or sheen. If oil or sheen is present, the liquid will be pumped out and disposed of properly via the sanitary sewer or directly at a wastewater plant.

46. Storm drain inlets will be protected to prevent coarse sediment from entering drainage systems prior to permanent stabilization of the disturbed areas. It may be necessary to build a temporary dike, use a block and gravel filter around the inlet using standard concrete blocks and gravel. Other methods recommended are gravel and wire mesh filters, catch basin filters, curb inlet protection with wooden weir, block and gravel curb inlet protection, or curb and gutter sediment barrier.

47. All construction and maintenance activities would be conducted in a manner that would minimize disturbance to drainage channels, and stream bank.