INTEGRATED SAFEGUARDS DATA SHEET
APPRAISAL STAGE

Report No.: ISDSA131

Date ISDS Prepared/Updated: 14-Nov-2011

I. BASIC INFORMATION

1. Basic Project Data

<table>
<thead>
<tr>
<th>Country:</th>
<th>Project ID:</th>
<th>Project Name:</th>
<th>Task Team Leader:</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>P096018</td>
<td>Assam State Roads Project (P096018)</td>
<td>Ashok Kumar</td>
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<table>
<thead>
<tr>
<th>Estimated Appraisal Date:</th>
<th>Estimated Board Date:</th>
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<tr>
<td>01-Nov-2011</td>
<td>13-Mar-2012</td>
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<tr>
<th>Managing Unit:</th>
<th>Lending Instrument:</th>
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<tbody>
<tr>
<td>SASDT</td>
<td>Specific Investment Loan</td>
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<th>Sector:</th>
<th>Theme:</th>
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<tr>
<td>Rural and Inter-Urban Roads and Highways (100%)</td>
<td>Infrastructure services for private sector development (67%), Public expenditure, financial management and procurement (33%)</td>
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</table>

<table>
<thead>
<tr>
<th>Financing (In USD Million)</th>
<th>Amount</th>
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<tr>
<td>Borrower</td>
<td>30.00</td>
</tr>
<tr>
<td>International Bank for Reconstruction and Development</td>
<td>320.00</td>
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<tr>
<td>Total</td>
<td>350.00</td>
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<table>
<thead>
<tr>
<th>Environmental Category:</th>
<th>Is this a Repeater project?</th>
</tr>
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<tbody>
<tr>
<td>A - Full Assessment</td>
<td>No</td>
</tr>
</tbody>
</table>

2. Project Objectives

The project development objective is to improve the secondary road network and institutional effectiveness of PWRD to deliver and manage an effective and safe road network, improving connectivity of Assam with rest of India.

3. Project Description

The total cost for the project is estimated at US$ 400 million, with IBRD loan of US$ 320 million and Govt. of Assam’s counterpart funding of US$ 80 million. A Sector Investment Loan (SIL) has been chosen as a lending instrument to finance the identified project works and technical assistance services. The project will be implemented by the Assam Public Works Department.

The project is structured around three components:

Component 1: Road Improvement: This component will support improvement of priority sections of the secondary roads to improve state connectivity and facilitate regional integration. The component will consist of: (a) civil works for about 500 km of secondary roads (about 300 km road widening and upgrading, and about 200 km pavement rehabilitation and strengthening) . This will also include demonstration of new technologies to promote cost effective, modern, climate resilient, and environment friendly road construction; (b) project preparation, supervision, management, and monitoring support; (c) resettlement and rehabilitation assistance to project-affected people and HIV/AIDS awareness program; and (d) pilots on innovative design and construction of bridges.

Component 2: Road Sector Modernization and Performance Enhancement: This component will support implementation of the RSMP, mostly to carry forward and deepen various institutional development initiatives already underway . The RSMP will be periodically reviewed and modified during project implementation. The component will concentrate on the following areas:

(a) Modernization of policies, engineering practices, and business procedures: This sub-component will support system-wide enhancement in PWRD through significant modifications and strengthening of its policies, rules, legislation, engineering standards, and business procedures based on best practice examples in the road industry. Key activities include development of a long term sector policy including a strategy for maintenance, revision of PWRD’s codes and manuals, and engineering manuals for design and construction of roads integrating engineering, social, environment, and safety aspects.

(b) Asset management and maintenance: This sub-component will support strengthening of and build on the existing institutions and systems for asset management through: (i) establishing a strategic core network representing key state and regional corridors; (ii) expanding and strengthening the role of the Road Board; (iii) operationalizing the Road Fund; (iv) putting in place a simple Asset Management System (AMS) to prepare prioritized plans for capital works and maintenance; and (v) executing maintenance works under the annual maintenance plans either through performance based or other innovative systems of contracting maintenance works.

(c) Institutional and Human Resource Development: This sub-component will support improvement in institutional effectiveness and efficiency of PWRD through implementation of suitable plans for (i) training and professional development of PWRD in identified priority areas including management of social and environmental issues; (ii) improvement of PWRD institutional structure including measures to increase efficiency and productivity of staff; and (iii) capacity building of the local construction industry.
4. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The project is located in the State of Assam in north-eastern India, covering an area of 78,523 sq. km, bordering the neighbouring states viz Arunachal Pradesh, Nagaland, Manipur, Mizoram, Meghalaya, West Bengal, Assam shares international boundary of about 500 km with Bangladesh and Bhutan.

Assam is a gateway to the landlocked north-eastern region and provides regional inter-connectivity. Traffic flows from the seven north eastern states (also known as "seven sisters") confluence onto the national highways in Assam through the SH and MDRs providing inter-state linkages before exiting the north eastern region. Thus, its road network has significant strategic importance for the integration of the lagging north-eastern region with the country's economy and facilitation of the south-east Asian trade and transportation.

With limited rail connectivity due to the difficult terrain in the region, most of the traffic, both passenger and goods use the roads in Assam. The condition of the road network in Assam is poorly developed and had suffered from years of neglect, due to under-funding, inadequate maintenance, and flood damages. The total road network is around 41,296 km, of which only 20 percent of the roads are paved compared to the national average of 58 percent. About 94 percent of the roads are still single lane and about 40 percent of SH and MDR have earth/gravel surface. Most roads have poor riding quality, weak pavements, inadequate capacity, and missing bridges.

About 40 percent of the state's population is below the poverty line compared to the national average of 32 percent. About 87 percent of its population lives in rural areas and depends mainly on agriculture for livelihood. The growth of the agriculture sector, which accounts for a third of the state's income, had been negative for many years and is still about 1.5 percent compared to the all India average of 3.1 percent during the last five years. Similarly, its industrial growth is 3.6 percent, which is less than half the all India average of 8.5 percent during the same period.

Assam is the biggest state of the north-eastern region having rich endowments of natural resources. The state accounts for 15 percent of the country's crude oil production and a sixth of the world's tea production (which is about 55 percent of tea production in the country). It possesses 320 million tons of coal reserves and has high potential for growth in the hydropower, agriculture, tourism, and forestry sectors. However, this potential remains largely untapped due to its inadequate infrastructure and poor market access compounded with frequent floods and lower levels of agriculture productivity.

Climate: The climate of Assam is temperate (summer max. at 35 - 38 and winter min. at 6 - 8 ) and the state experiences heavy rainfall and high humidity. The annual average mean relative humidity is 82% in the morning and 70% in the evening. The climate is characterized by heavy monsoon downpours reducing summer temperatures and affecting foggy nights and mornings in winters. The average rainfall during May to September is about 81 percent of the total. Thunderstorms known as Bordoicila are frequent during the afternoons. Spring (Mar-Apr) and autumn (Sept-Oct) are usually pleasant with moderate rainfall and temperature.

Geology: The Assam Shelf is considered as a vast inter-mountain basin, is bounded by the Himalaya in the north, Indo-Burma Ranges to the east, the Mishmi block to the north-east and the Shillong Plateau and Mikir Hills to south-west. This basin, through which the Brahmaputra River flows, is covered by thick alluvium and is structurally less complex and tectonically less deformed than the thrust zone (Schuppen Belt) to the east. The sub-surface geology of the upper Assam basin is known from oil exploration data. Uplift of the Shillong Plateau has been a major influence on sedimentation and the structural configuration of young strata of the Assam Shelf. Thickness of Lower Cenozoic sediments in the shelf zone ranges from 3.6 km to more than 7 km. Sediments include shallow marine Paleogene to continental Neogene sediments overlying a granitic basement. Rocks with lithological affinities with the Shillong-Meghalaya Gneissic Complex (SMGC) are believed to form the base of the Assam Shelf.

Soils: Assam's soil been classified into the following three types - red loam soil, lateritic soil and alluvial soil. The entire Mizo hills, part of Cachar, Garo, Khasi-Jaintia hills and Sibsagar are capped by red loam soil. A small part of Cachar, large areas of Khasi and Jaintia hills, part of Sibsagar and Nowgong are covered by lateritic soil. The entire Lakhimpur, Darrang, Kamrup, Goalpara, part of Garo hills and Sibsagar are made up of alluvial soil cover.

Seismicity: Earth quakes occur in the region of marked instability of the crust of the earth. Most of the earth quakes in India originate in Himalayan zone. At the western extremity, where the main Himalayas meet the Baluchistan area of mountains, and in the eastern extremity, where the Burmese area meets the Eastern Himalayas, the crust is most unstable. As such, the Baluchistan and Assam areas are most susceptible to earth movements. Another zone of instability occurs along the margin of the Shillong plateau.

Rivers: Due to heavy rainfall in the Himalayan and other watersheds of the eastern India region, Assam is endowed with extensive river system consisting of the Brahmaputra, the Kusiyara and the Barak and their tributaries. All the rivers in Assam are liable to floods, mainly because they receive heavy rainfall within a short time. These rivers are in their early stage of maturity and are very active agents of erosion. The river waters collect a tremendous amount of silt and other debris and raise the level of the river beds. Therefore, it becomes impossible for the main channel to cope with the vast volume of water received during the rains.

Land-use Profile: Agriculture is the dominant land use category in the state. It account for about for about 54.11 percent of the total geographical area of the state. However, if persons dependent on plantation are also included, more than 80 percent of the total population of Assam is dependent on agriculture. With the increase of population and the development of agro-technology, lots of changes are taking place in the agricultural scenario of the state. The net area sown as well as the gross cropped area increased significantly in the last few decades.

Biodiversity: Assam is one of the richest biodiversity zones in the world. Assam is known for its extensive forest areas and availability of rich flora and fauna. Assam is also known for orchids and for valuable plant species and forest products. There are number of tropical rainforests in Assam. Moreover, there are riverine grass lands, bamboo orchards and numerous wetland ecosystems.

(d) Streamlining, Standardizing, and Computerizing PWRD key business processes: This sub-component will support enhancements and rollout of various modules of APCP to all field offices in a phased manner.

Component 3: Road Safety Management: This component will support building of road safety management capacity of related agencies through developing and implementing a multi-sector road safety strategy and including a safe corridor demonstration program and safe road system projects on identified road sections, development and operationalization of a road accident database and management system, building of road safety capacity for PWRD during design, construction and operation stages, and awareness programs on road safety and work zone safety. The component will also support implementation of engineering counter-measures for 300 km roads under Component 1.
Many of these areas have been protected by designating them as national parks, sanctuaries and reserved forests. The Kaziranga and Manas are the two World Heritage Sites. The Kaziranga is the home for the rare Indian Rhinoceros while Manas is a tiger sanctuary. Nameri, Dibrugarh and Sonitpur are other designated protected areas in the National Parks category. In addition to this, there are 16 wildlife sanctuaries in the state. These include the Garampani; Laokhowa; Burucharapar; Chakrasila; Bornadi; Sonai-Rupai; Pabitora (with the highest concentration of Rhinos per sq. km in the world); Deepar Beel; Panidihing Bird Sanctuary; Bordoi Birdwell; Padumani; Nambor; Karbi Anglong and Amchung Wild life Sanctuaries.

Rhino habitat: The Indian Rhinoceros (Rhinoceros unicornis) is also called Greater One-horned Rhinoceros and Asian One-horned Rhinoceros and belongs to the Rhinocerotidae family. It is heavily built beast of mammouth proportions, next to the Indian Elephant. Listed as a vulnerable species, it is the largest of the three Asian rhinos. The Indian rhinoceros once ranged throughout the entire stretch of the Indo-Gangetic Plain but excessive hunting reduced their natural habitat drastically. Today, about 3,000 rhinos live in the wild, 2,000 of which are found in Assam alone.

Elephant Habitat: The Indian Elephant (Elephas maximus indicus) is one of three recognized sub-species of the Asian elephant, and native to mainland Asia. Since 1986, Elephas maximus has been listed as endangered by IUCN as the population has declined by at least 50 percent over the last three decades. Total elephant population found in the state of Assam was estimated to be 3,780 (as per the Elephant Survey of India, 2005). The major elephant populations of the state are found in Northern Assam along the north bank of the River Brahmaputra; in eastern Assam in the flood plains of the Brahmaputra and the Lohit River; and along the South Bank of the Brahmaputra. The species is pre-eminently threatened by habitat loss, degradation and fragmentation.

Tiger reserves: Three national parks are identified as tiger reserves in the state of Assam.

\[ (\text{Kaziranga National Park: It is a national park and a world heritage site in Golaghat and Nagaon districts of the state of Assam. Kaziranga boasts the highest density of tigers (85 nos) among protected areas in the world and was declared a Tiger Reserve in 2006. The park is home to large breeding populations of elephants, wild water buffalo, and swamp deer.})]  
\[ (\text{Manas National Park: It is a UNESCO Natural World Heritage site, a Project Tiger Reserve, an Elephant Reserve and a Biosphere Reserve in Assam, India. Located in the Himalayan foothills, it is bordering the Royal Manas National park in Bhutan. The park is known for its rare and endangered endemic wildlife such as the Assam Roofed Turtle, Hispid Hare, Golden Langur and Pygmy Hog. Manas National Park harbours 65 tigers (as per 2007 census)})]  
\[ (\text{Nameri National Park: Nameri National Park is located in the foothills of the Eastern Himalayas in the Sonitpur District of Assam, India, about 35 kilometres from Tezpur. Nameri shares its northern boundary with the Pakhui Wildlife Sanctuary of Arunachal. This is an excellent elephant country and ideal habitat for a host of other animals, including the tiger. Nameri national park shelters 29 tigers (as per 2007 census)})]  

Other Wildlife: Apart from the Rhinoceros, Elephant and Tiger, the Spotted Deer or Chital, the Swamp Deer or Dolharina, the Clouded Leopard, the Hoolock Gibbon or Holouбанder, Pigmy Hog or Nol-gahori, the Wild Buffalo, the Hispid Hare, the Golden Langur, the Golden Cat, the peculiar Giant Civet, the Binturong, the Porcupines, the Civet cats, etc. are found in Assam. Moreover, there are abundant numbers of Gangetic Dolphins, Mongoose, Giant Squirrels and Pythons. The major bird species found in Assam include the Blue-throated Barbet and Hetuluka (Megalaima aiasia), the White-winged Wood Duck or Deuhnnah (Cairinascultulata), the Ring-tailed Fishing Eagle or Kuruwak (Haliaeutes leucogaster), the Great Pied Hornbill or Rajdhonesh (Bucero bicornishomrai), the Himalayan Golden-backed Three-toed Woodpecker or Barhoituka (Dinopium unicolor), and the Migratory Pelicans.

Forest Resources: As per the land use data, the state has 630 lakes and ponds of different types of forest is only 17,26,387 ha., which is about 23.9 percent of the total geographical area of the state. Out of the total (23.9 %) forest area, 56.7 percent is under evergreen/semi evergreen forest, 26.3 percent is under deciduous forest, 12.4 percent in degraded forest and 4.60 percent is under forest plantation. With the over exploitation of forests and the large-scale encroachment of forest lands, the forest resources of the state are depleting fast. The degradation of forest in the upper catchments of the rivers has intensified the problem of gully erosion, which has already reached to unmanageable proportion in some areas of the state. The forest ecosystem of the State includes the national parks, biosphere reserves, wildlife sanctuaries and reserved forests. These ecosystems of the state are very rich in plant and animal diversity. The forest ecosystems of the state also possess within them wetlands having rich aquatic diversity. The forests in the plains district are managed by the State Forest Department while the authorities for management of the forest in the two hill districts are their respective District Councils.

Grasslands: The grassland ecosystem occurs in the alluvial plains and riparian flats throughout the state and many of the areas are generally inundated every year during the monsoon period. The main grassland ecosystems of Assam include the Kaziranga (Golaghat, Nagaon and Sonitpur districts); Manas (Barpeta and Bongaigaon districts); Dibrugarh and Tinsukia districts); Amurpur and SibiaChapori (Tinsukia district); Orang (Darrang and Sonitpur districts); Laokhowa (Nagaon district) and Kobochapori (Dhemaji district).

Wetlands: The valley of the river Brahmaputra with its innumerable fresh water lakes (locally called beel), or ox-bow lakes (era suit), marshy tracts and seasonally flooded plains and hundreds of riverine sandbars and islands makes an ideal wetland eco-system in the state of Assam. About 3500 wetlands ranging from 1 to more than 600 hac. in area exist in the Assam.

About 100 aquatic plant species have been identified in Assam so far. Eichhorniacrassipes, Nymphaeaspp, Otteliasp, Ludwigiaspp, Pliostiriatotipes, Azollapinnata, Monochorabastata, Cyperusspp, Scirpusspp, Ipomea aquatica, Nelmumbonucifera, Tranapatanans and Euryaleferox are common in many wetlands. Recently, Ipomea fistulosa (commonly known as Panibhotera) has become the most dominant weed of marshy areas. About 100 aquatic plant species have been identified in Assam so far. Eichhorniacrassipes, Nymphaeaspp, Otteliasp, Ludwigiaspp, Pliostiriatotipes, Azollapinnata, Monochorabastata, Cyperusspp, Scirpusspp, Ipomea aquatica, Nelmumbonucifera, Tranapatanans and Euryaleferox are common in many wetlands. Recently, Ipomea fistulosa (commonly known as Panibhotera) has become the most dominant weed of marshy areas.

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Lakes/Ponds: In Assam, there are 690 lakes and ponds as recorded through the study. These lakes /ponds cover an area of 15494.00 ha which constitutes 0.20 % of the total geographical area of the state and 15.30 % of the total area under wetlands. Highest number of lakes / ponds are observed in Golaghat district (113 number) followed by Dhubri (73 number) and Nagaon (68 number) districts. But areawei, the highest area under this category is observed in Kamrup district (15705.00 ha) followed by Nagaon (2175.50 ha) and Dhubri (1816.50 ha) districts. Some of the important wetlands under this category are Deeparbeel in Kamrup district, Dhirbeel in Dhubri district, Tamarangabeel and Dalanibeel in Bongaigaon district.

Ox-bow Lakes / Cut-off Meanders: A total 861 number of ox-bow lakes/cut-off meanders are observed throughout the state of Assam. The smallest of them measures 5.0 ha while the largest one has 582.50 ha of aerial coverage. Highest number of ox-bow lakes / cut-off meanders are observed in Golaghat district (104 number) followed by Nagaon district (71 number) and Dhubri (68 number). But area wise, the highest area under this category is observed in Morigaon district (2143.00 ha) followed by Nagaon (1746.00 ha) and Golaghat (1563.00 ha) districts. Some of the important wetlands under this category are Monikolong and Patolibeel in Nagaon district, Merbeel in Golaghat district and Gurujairan in Morigaon
Some of the project roads may traverse within or adjacent to the forest areas, some roads would pass through the tribal areas/scheduled areas governed by Environmental issues in this project relate mostly to the sensitive road safety action plans. The results will help to design the road safety interventions under this project including the identification of priority corridors for intervention and road safety action plans.

5. Environmental and Social Safeguards Specialists

Sanjay Srivastava (SARDE)
Neha Pravash Kumar Mishra (SASDI)
Parthapriya Ghosh (SASDS)

6. Safeguard Policies Triggered

<table>
<thead>
<tr>
<th>Policy</th>
<th>Triggered</th>
<th>Explanation</th>
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<tr>
<td>Environmental Assessment OP/BP 4.01</td>
<td>No</td>
<td>Environmental issues in this project relate mostly to the sensitive environmental settings of Assam and the neighboring states. Assam is geologically of recent origin, experiences regular floods and frequent seismic movements, and is characterized by features such as rich evergreen forests, floodplains, marshes, wetlands, folded hill ranges and old plateaus. Assam is part of the Indo-Myanmar region IUCN Global Biodiversity hot spot. Potentially, the project could impact the forest patches, small and medium sized wetlands, and natural habitats located outside the protected areas. Other relevant issues for the highways sector include drainage congestions, meandering rivers and erosion, and fragile flood embankments when used as roads. However, many of the project interventions (road preservation, and improving roads on current alignments) will involve limited civil works, and the consequent environmental impacts could also be limited.</td>
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<tr>
<td>Natural Habitats OP/BP 4.04</td>
<td>No</td>
<td>The project roads will be preserved or improved on the existing alignments, and should avoid impacting any protected natural habitats. However, substantial floral and faunal resources in the state (and in the neighbouring states) exist outside the formally protected areas. The environmental assessment will determine if any such significant resources will be impacted by the project.</td>
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<tr>
<td>Forests OP/BP 4.36</td>
<td>No</td>
<td>Some of the project roads may traverse within or adjacent to the forest areas, particularly the small forest patches that are located all over the state. The environment assessment will determine if the project will impact the forests, either directly by acquisition of forest areas, or by impacting the quality of forest through edge deterioration or fragmentation, etc.</td>
</tr>
<tr>
<td>Pest Management OP 4.09</td>
<td>Yes</td>
<td>Assam has a number of cultural property sites, including sites of archaeological (prehistoric), paleontological, historical, religious, and unique natural values; religious properties and sacred groves. The environmental assessment will determine the extent of direct or indirect impacts on these cultural properties by the project.</td>
</tr>
<tr>
<td>Physical Cultural Resources OP/BP 4.11</td>
<td>No</td>
<td>Some roads would pass through the tribal areas/scheduled areas governed by Autonomous Council. The details of likely social impacts will be available during project preparation. The SIA will carefully assess the likely project impacts on indigenous people and evolve the measures to mitigate them. This will include detailed consultations with indigenous peoples to understand their concerns and priorities. Indigenous People Development Plans (IPDP) will be developed as required in consultation with representatives of the Council.</td>
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### II. Key Safeguard Policy Issues and Their Management

#### A. Summary of Key Safeguard Issues

1. **Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:**

   As part of the project preparation, an environment and social assessment was carried out, comprising: (i) an environment and social screening exercise for about 420 km of roads; (ii) corridor-specific environment and social impact assessment for the sub-projects (completed for four Phase I Batch I roads covering 106.4 kms and are in advanced stages for the four Phase I, Batch II roads covering 108 kms); (iii) a census and socio-economic survey of inhabitants of all structures and land within the corridor of impact (COI) for phase I of the upgrading component; and (iv) consultations/focus group discussions. Outputs from the screening and assessment studies have been integrated into the decision-making and design, where technically feasible. These assessments have identified the following environment and social issues/risks associated with the proposed project:

   Environmental Impacts. Due to the rich natural resources of the state, the project activities, if not properly mitigated, could have adverse environmental impacts. These impacts include: (i) felling of roadside trees (nearly 6900 trees for Phase I, Batch I and II roads); (ii) adverse impacts on water resources used by the people (for domestic, fishing and other uses), including road side beels, ponds, river/streams, and hand pumps; (iii) conversion of some marginal agricultural/farm lands for road works; (iv) impairment to or worsening of the local and regional drainage due to poor planning; (v) construction phase impacts including those related to camp site operation, dust generation and pollution from plants, machinery and vehicles; (vi) improper management and disposal of debris and other wastes arising due to scarsification and dismantling of bridges and other structures; and (vii) the potential for poorly planned or managed development induced by the improved highway.

   The environmental impacts could include some adverse impacts on schools, hospitals and religious properties located along the road corridors due to increased noise and air pollution during construction and operation stages of the project. However, since widening of roads is limited to two lanes (and in some cases, even less than that) and most of the work has been proposed within the existing right of way (RoW), most of the direct adverse impacts on environment are likely to be limited in nature.

   With the help of findings from the environmental screening and preliminary environmental assessment study, sub-projects/roads traversing through designated protected areas (such as National Parks/Sanctuaries) have not been included under the project (such as Narengi to Bhaktai section of SH-3, which traverses three small sections of Pobitara Wildlife Sanctuary along its northern boundary and is adjoining the boundary of Amchung Wildlife Sanctuary located just outside Guwahati, the state capital).

   However, there are a couple of sub-projects that are located within 10 kms from the boundary of protected areas such as Wildlife Sanctuaries and Reserved Forests. One such case is that of SH-31, Jorhat to Morioni, a part of Phase I (Batch I), the nearest point of which is about 2 km from the forest from the Hollongapar Gibbon Wildlife Sanctuary. In such cases, corridor specific environment assessment study includes an identification/assessment of wildlife crossing/s (if any) on the sub-project in question apart from the regulatory clearances/permissions (such as that from the Chief Conservator of Forests (Wildlife)). Another such sub-project, which is located close to a designated protected area/wildlife sanctuary, is a section of SH-3 between Nagaon to Naltali, proposed as part of Phase I, Batch III works. The exact distance and other details for this link is to be ascertained using results from the environment assessment study.

   After a recent amendment made by GoI in the Environment Notification in April 2011, it has been confirmed that environmental clearances from MoEF are not required for Phase I (Batch I and II) roads. Social Impacts/Risks. The project is expected to have some positive social impacts in terms of reducing travel costs to/from markets and social services as well as helping to integrate the scattered population. The selection of project roads for upgrading took into account the issue of regional balance with the poorer districts in the state. However, the project also entails some potential negative social impacts from the loss of land, unavoidable resettlement, increased speeds and boost to migration. These are to be minimized or mitigated in a structured and transparent manner.

   The assessment finds that widening of roads to two lanes (and, in some cases, less-than two lanes) does not require extensive resettlement. Wherever possible, road improvement work will be carried out within the existing right of way (ROW). Approximately 80 percent land is available in the entire phase I project corridors. Consultations with affected communities helped to minimize the extent of resettlement as well as adverse effects on common property resources (CPR) and road safety.

   In phase I upgrading works, 13,173 hectares of private land will be acquired. The census survey results shows that 1315 families (3630 PAPs) including titleholders will be affected, of which 173 families (548 PAPs) will be displaced. A total of 101 Common Property Resources (CPR) will be affected in Phase I consisting of 31 religious structures; 7 community assets; and 63 government buildings. The social assessment also helped in the preparation of an entitlement framework, as well as the Resettlement Action Plan (RAP) in accordance with OP 4.12. Further, local level consultations have been carried out at seven locations during the finalization of Resettlement Action Plan. A similar process of social assessment is being followed for works proposed under other phases.

2. **Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:**

   - **TABLE:**

     | 6. Safeguard Policies Triggered | Yes | No | Explanation |
     |--------------------------------|-----|----|-------------|
     | Involuntary Resettlement OP/BP 4.12 | ✖  |    | The proposed road improvement works would mostly be along the existing alignments but may lead to land acquisition and displacement of adversely affected people. A social impact assessment (SIA) will be carried-out for first year roads and a representative sample of the rest. A Resettlement Policy framework with an entitlement matrix for different types of impacts/losses will be prepared for the entire project. Resettlement Actions Plans will be prepared for each sub-project using that framework. |
     | Safety of Dams OP/BP 4.37 |    | ✖ | |
     | Projects on International Waterways OP/BP 7.50 |    | ✖ | |
     | Projects in Disputed Areas OP/BP 7.60 |    | ✖ | |

   - **II:**

      **Key Safeguard Policy Issues and Their Management**

      **A. Summary of Key Safeguard Issues**

      1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

         As part of the project preparation, an environment and social assessment was carried out, comprising: (i) an environment and social screening exercise for about 420 km of roads; (ii) corridor-specific environment and social impact assessment for the sub-projects (completed for four Phase I Batch I roads covering 106.4 kms and are in advanced stages for the four Phase I, Batch II roads covering 108 kms); (iii) a census and socio-economic survey of inhabitants of all structures and land within the corridor of impact (COI) for phase I of the upgrading component; and (iv) consultations/focus group discussions. Outputs from the screening and assessment studies have been integrated into the decision-making and design, where technically feasible. These assessments have identified the following environment and social issues/risks associated with the proposed project:

         Environmental Impacts. Due to the rich natural resources of the state, the project activities, if not properly mitigated, could have adverse environmental impacts. These impacts include: (i) felling of roadside trees (nearly 6900 trees for Phase I, Batch I and II roads); (ii) adverse impacts on water resources used by the people (for domestic, fishing and other uses), including road side beels, ponds, river/streams, and hand pumps; (iii) conversion of some marginal agricultural/farm lands for road works; (iv) impairment to or worsening of the local and regional drainage due to poor planning; (v) construction phase impacts including those related to camp site operation, dust generation and pollution from plants, machinery and vehicles; (vi) improper management and disposal of debris and other wastes arising due to scarsification and dismantling of bridges and other structures; and (vii) the potential for poorly planned or managed development induced by the improved highway.

         The environmental impacts could include some adverse impacts on schools, hospitals and religious properties located along the road corridors due to increased noise and air pollution during construction and operation stages of the project. However, since widening of roads is limited to two lanes (and in some cases, even less than that) and most of the work has been proposed within the existing right of way (RoW), most of the direct adverse impacts on environment are likely to be limited in nature.

         With the help of findings from the environmental screening and preliminary environmental assessment study, sub-projects/roads traversing through designated protected areas (such as National Parks/Sanctuaries) have not been included under the project (such as Narengi to Bhaktai section of SH-3, which traverses three small sections of Pobitara Wildlife Sanctuary along its northern boundary and is adjoining the boundary of Amchung Wildlife Sanctuary located just outside Guwahati, the state capital).

         However, there are a couple of sub-projects that are located within 10 kms from the boundary of protected areas such as Wildlife Sanctuaries and Reserved Forests. One such case is that of SH-31, Jorhat to Morioni, a part of Phase I (Batch I), the nearest point of which is about 2 km from the forest from the Hollongapar Gibbon Wildlife Sanctuary. In such cases, corridor specific environment assessment study includes an identification/assessment of wildlife crossing/s (if any) on the sub-project in question apart from the regulatory clearances/permissions (such as that from the Chief Conservator of Forests (Wildlife)). Another such sub-project, which is located close to a designated protected area/wildlife sanctuary, is a section of SH-3 between Nagaon to Naltali, proposed as part of Phase I, Batch III works. The exact distance and other details for this link is to be ascertained using results from the environment assessment study.

         After a recent amendment made by GoI in the Environment Notification in April 2011, it has been confirmed that environmental clearances from MoEF are not required for Phase I (Batch I and II) roads. Social Impacts/Risks. The project is expected to have some positive social impacts in terms of reducing travel costs to/from markets and social services as well as helping to integrate the scattered population. The selection of project roads for upgrading took into account the issue of regional balance with the poorer districts in the state. However, the project also entails some potential negative social impacts from the loss of land, unavoidable resettlement, increased speeds and boost to migration. These are to be minimized or mitigated in a structured and transparent manner.

         The assessment finds that widening of roads to two lanes (and, in some cases, less-than two lanes) does not require extensive resettlement. Wherever possible, road improvement work will be carried out within the existing right of way (ROW). Approximately 80 percent land is available in the entire phase I project corridors. Consultations with affected communities helped to minimize the extent of resettlement as well as adverse effects on common property resources (CPR) and road safety.

         In phase I upgrading works, 13,173 hectares of private land will be acquired. The census survey results shows that 1315 families (3630 PAPs) including titleholders will be affected, of which 173 families (548 PAPs) will be displaced. A total of 101 Common Property Resources (CPR) will be affected in Phase I consisting of 31 religious structures; 7 community assets; and 63 government buildings. The social assessment also helped in the preparation of an entitlement framework, as well as the Resettlement Action Plan (RAP) in accordance with OP 4.12. Further, local level consultations have been carried out at seven locations during the finalization of Resettlement Action Plan. A similar process of social assessment is being followed for works proposed under other phases.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:
No adverse long-term impacts are anticipated due to future activities on the highway. It is anticipated that some local drainage problems would be resolved due to road improvements. Largerly, the social and environmental impacts of the project are expected to be positive and beneficial. The project is also expected to improve the over-all economic profile of the community/people served by the upgraded roads. The primary project beneficiaries will be businesses, industries, and inhabitants either living along or served through the project roads.

The project is expected to benefit about (3) million rural people, who are mostly poor and small farmers. Many of these would also be the beneficiaries of Bank funded ARIASP, AACP, and the Northeast Region livelihoods projects, who would also be served through the infrastructure created under the project. About (8) million man days of direct employment would be created through road improvement component and (2) million man days annually through the maintenance program. The secondary beneficiaries will include PWRD, Transport and Police departments, and construction industry in Assam whose capacities are to be significantly strengthened. The secondary project beneficiaries will also include those located in other north-eastern states but transit or served through the project roads.

However, land and property development is expected to follow after the highway improvement. Poor management of this development may create negative impacts in the medium or long term, by way of additional stress on local infrastructure or by encouraging ribbon development.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

To minimize direct impacts on environmental features and to minimize land acquisition and its impacts on assets and livelihood of people, different cross sections were considered and adopted. During the detailed feasibility studies and the EIA and SIA exercises, cross-sectional and geometric design alternatives were considered. Accordingly, options/ alternatives were prepared for rural and urban areas.

The factors which have influenced the designs of the road improvement works include resettlement, tree cutting, impact on water bodies, loss of arable land and impact on cultural/religious properties. As far as feasible, concentric widening has been adopted, particularly in the built up stretches to minimize direct environmental and social impacts. To a great extent, center line has not been shifted along the corridor to minimize land acquisition and its related impacts on environment and social features. Minor realignments have been proposed at places where geometric improvement was required for the purpose of safety and for construction of new bridges.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

Management of Environmental Issues. As part of project preparation, the Borrower through an independent consultant carried out an Environmental Screening exercise for about 420 km of roads and preparation of corridor specific Environment Impact Assessment (EIAs) Reports, including public consultation for 106.7 kms of Phase I, Batch I roads have been carried out. The findings and recommendation from these studies and consultations have been integrated into the engineering design and bidding documents to help avoid and reduce environmental impacts. Appropriate plans and measures have been developed, which include corridor-specific Environmental Management Plans (EMPs) for upgrading works and an Environment Management Framework (EMF) containing a generic EMP for the rehabilitation works proposed under the project to address various issues identified in the environmental studies.

The proposed improvements envisaged under ASRP mostly pertain to improvements/ strengthening/widening of existing highways. Though the proposed road improvement works would mostly be along the existing alignments, some of the roads pass adjacent to environmentally sensitive features/areas. The Environmental Management Framework has been prepared to guide the Assam Public Works Department, in subproject selection, screening and categorization, environmental assessment, and preparation and implementation, monitoring, and preparation of environmental assessments/management plans for project roads to facilitate compliance with the requirements specified in the World Bank Operational Policies, GoI/GoA rules and regulation.

The EMPs address construction-stage impacts such as: (a) air and noise pollution including dust generated from material transport, crushers and asphalt plants; (b) water and soil pollution from spills of fuel, lubricants and construction camp wastes; (d) operation and rehabilitation of borrow pits, quarries and construction camps; (e) traffic safety and management; (f) workforce health and safety and; (g) debris management. EMPs also include monitoring plans and reporting arrangements for both construction and operation-stage activities. In addition, slope stabilization initiatives using vegetative material has been proposed and included in design to reduce soil erosion, siltation of water bodies and road maintenance cost apart from improving aesthetics.

In addition, with the help of findings from the environmental screening and preliminary environmental assessment study, sub-projects/roads traversing through designated protected areas (such as National Parks/Sanctuaries) have not been included under the project (such as Narengi to Bhakatgaon section of SH-3, which traverses three small sections of Pobitara Wildlife Sanctuary along its northern boundary and is adjoining the boundary of Amchung Wildlife Sanctuary located just outside Guwahati, the state capital).

The APWD has put in place an institutional structure that should be able to address environmental management and safeguard related issues that are likely to be encountered during project implementation. For this, the Borrower has established an environment cell headed by an Executive Engineer and supported by an Environment Expert (hired from the market), Assistant and Junior Engineers. Further, efforts are being made to select an appropriate pilot for demonstrating the concept of #environment friendly highways# towards sustainable asset management as part of Phase II/III works, the assessment studies for which are currently under-way.

Management of Social Issues. The Borrower through an independent consultant carried out corridor specific Social Impact Assessment and based on these results has prepared: (i) entitlement framework; (ii) corridor specific Resettlement Action Plans; and (iii) Indigenous Peoples Development Plan, in consultation with the community. The RAP details out the relevant legal policies, various kinds of impacts and its quantification; procedures and institutional responsibilities for implementation of safeguard issues; gender and HIV/AIDS issues and implementation plan; monitoring and evaluation indicators and process and budget for implementation. Apart from corridor specific RAPs, a resettlement policy framework have also been prepared that will guide preparation of RAPs for phase II upgrading works. Similarly, a separate Indigenous Peoples Management Framework has been prepared to facilitate preparation of IPDPs for phase II upgrading roads,

The Borrower has established a social and environment cell headed by an Executive Engineer and supported by Assistant and Junior Engineers to guide PWD and implementing NGO in addressing social issues. The cell also has two retired revenue officials to assist the team with land acquisition issues. The PWD is in the process of hiring a non-governmental organization (NGO) for implementation of Resettlement Action Plan and Indigenous Peoples Development Plan. The implementation structure is described below:

1. Social Management Cell (SMC): The cell constituted by the Government of Assam by order (No.RBEB.193/2008/18 dated 27th April 2011) is headed by the Chief Engineer to oversee all the activities related to land acquisition for the project, R&R implementation, and RAP implementation. The cell consists of 4 Assistant Engineers, 1 Junior Engineer and 1 consultant (retired from revenue department). The staffs are already placed in the PIU. The officials of SMC will interact with the divisional level staffs for the co-ordination with the revenue officials for
2. R&R implementation Cell: The PIU is responsible for implementing the RAP in accordance with the provision of the ASRP policy 2007. To accelerate the speedy implementation of the project, a State Level R&R and District Level R&R Cell have been constituted. These Cells are entrusted the responsibilities of looking after the implementation of RAP. The structure of the State R&R Cell and District R&R Cell are proposed as suggested in ASR&R policy.

3. The State & the District R&R cells will be responsible for the co-ordination and liaison with various agencies at the district level and state level for facilitating the land acquisition, shifting of utilities, disbursement of compensation and assistance to the PAPs/PAFs. 

NGO participation in RAP and IPDP implementation: The NGO will ensure that the due benefits flow to all the PAPs and specifically to the tribal in the most effective and transparent manner. The success of the NGO inputs will largely depend on their liaison with the PAPs; tribal and other concerned government agencies involved in R&RAP. The role of NGO would be of a facilitator. The NGO will work as an interface between the PWD and the PAPs and tribal community. They will train / orient the PAPs and tribal community on planning, formulation, preparation and execution of annual action plan. 

Grievance Redress: To address the grievances of the PAPs in disbursement of compensation and Resettlement aspects will be address by the District Level grievance redressal cell. The deputy commissioner will constitute the cell within 3 months from issue of 4 (1) publication. The space for the functioning of the cell will be provided in the Deputy Commissioner#s office. The cell will be represented by the PAPs, village council, NGO and other opinion leaders who will look into the grievance of the people. The Redressal committee will be chaired by a retired officer, who served as principal/judges/ Deputy commissioner/Additional Deputy Commissioner, etc. The suitable person from the locality/district will be decided by the DC. Apart from the nominated persons, the representative from district Land acquisition division and Executive engineer PWD will attend all the meeting. The district grievance cell will conduct a meeting at the first week of every month to hear the grievances from the PAPs. All the complaints will be forwarded to the concerned department/officials within 15 days from the date of receiving the complaints. The issues resolved/addressed by concern officials within 45 days from the receipt of the complaints. All the grievances received shall be discussed by the Chairman of the cell with DC for the necessary action.

4. Monitoring and evaluation: RAP implementation will be closely monitored by the R&R cells with an effective basis for identifying potential difficulties and problem areas. Monitoring will be carried out by appropriate specialists within the R&R cell and report regularly to the Project Director on a monthly basis. The PIU will appoint an external Monitoring and evaluation agency to evaluate the level of compliance to RAP. The external evaluation agency will be appointed within 10th month. The evaluation will be done by a single agency for all project packages. The agency will be responsible for conducting the evaluation at the middle of every project milestone as desired by the PIU. The agency shall submit their report to the PIU within 30 days on completion of their monitoring evaluation.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

Consultations with both primary and secondary stakeholders on design proposals were conducted throughout the project area and suggestions/views were sought on environmental and social issues. The primary stakeholders consulted include: (i) the roadside community having their temporary or permanent residences, (ii) Road side shop owners/vendors (iii) tribal families getting affected and tribal community; (iv) members of autonomous council; and (v) Road users. While the secondary stakeholders included mostly the project officials working on road projects in the area, officials from Forest and Wildlife Department, Non Governmental Organizations and a few academicians. In deciding the target groups for consultations, care was taken to have a representation of a cross section of road side community and road users. These consultations provided inputs on the various environmental and social issues and in identification of the felt needs of the communities. A total of seven formal consultations and several rounds of informal consultations were carried out during the RAP preparation. The consultations were held with the people living along the corridors, who are likely to be affected. Individual consultations were also done with the PAPs during the Socio-Economic Survey. The issues identified/discussed during the consultations are presented below.

# Demand for improvement of existing roads
# Request for replacement of the existing wooden bridges
# Issues pertaining to loss of road side trees, drainage, water sources, pollution etc.
# Relocation of cultural properties
# Relocation of residential and commercial structures
# Improvement of poor geometrics.
# Assistance loss of livelihood
# Support for the encroachers and squatters

Local community consultations were carried out in all the four Phase I, Batch I upgrading works between February 2010 to May 2011. The Environment and Social Screening Report, EMF, EIAs, EMPs, RAPs and IPDP for Phase 1 works have been disclosed in Infoshop on July 27, 2011. These documents are also available on the GoA website and have been disclosed for public reference on July 19, 2011. The executive summary in local language has also been uploaded on the GoA website. The safeguard documents have also been placed in the PWD field offices. Once the project commences implementation, the project team is expected to have regular consultations with local stakeholders on issues related to environmental and social issues.

B. Disclosure Requirements Date

| Environmental Assessment/Audit/Management Plan/Other | Yes |
| Date of receipt by the Bank | 14-Jul-2011 |
| Date of “in-country” disclosure | 19-Jul-2011 |
| Date of submission to InfoShop | 27-Jul-2011 |

| Resettlement Action Plan/Framework/Policy Process | |
| Was the document disclosed prior to appraisal? | Yes |
| Date of receipt by the Bank | 14-Jul-2011 |
Date of "in-country" disclosure: 19-Jul-2011
Date of submission to InfoShop: 27-Jul-2011

### Indigenous Peoples Development Plan/Framework
- **Was the document disclosed prior to appraisal?** Yes
- **Date of receipt by the Bank** 14-Jul-2011
- **Date of "in-country" disclosure** 19-Jul-2011
- **Date of submission to InfoShop** 27-Jul-2011

If the project triggers the Pest Management and/or Physical Cultural Resources policies, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/Audit/or EMP.

If in-country disclosure of any of the above documents is not expected, please explain why:

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

| OP/BP/GP 4.01 - Environment Assessment | Yes [ x ] | No [ ] | NA [ ] |
| OP/BP 4.04 - Natural Habitats | Yes [ ] | No [ ] | NA [ x ] |
| OP/BP 4.11 - Physical Cultural Resources | Yes [ x ] | No [ ] | NA [ ] |
| OP/BP 4.10 - Indigenous Peoples | Yes [ x ] | No [ ] | NA [ ] |
| OP/BP 4.12 - Involuntary Resettlement | Yes [ x ] | No [ ] | NA [ ] |
| OP/BP 4.36 - Forests | Yes [ ] | No [ ] | NA [ ] |

The World Bank Policy on Disclosure of Information

- Have relevant safeguard policies documents been sent to the World Bank's InfoShop? Yes [ x ] | No [ ] | NA [ ] |
- Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs? Yes [ x ] | No [ ] | NA [ ] |

All Safeguard Policies

- Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies? Yes [ x ] | No [ ] | NA [ ] |
- Have costs related to safeguard policy measures been included in the project cost? Yes [ x ] | No [ ] | NA [ ] |
- Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies? Yes [ x ] | No [ ] | NA [ ] |
- Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents? Yes [ x ] | No [ ] | NA [ ] |

### III. APPROVALS

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<tr>
<th>Signed and submitted by:</th>
<th>Name</th>
<th>Date</th>
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<tbody>
<tr>
<td>Task Team Leader:</td>
<td>Ashok Kumar</td>
<td>14-Nov-2011</td>
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**Approved By:**

- **Regional Safeguards Coordinator:** Sanjay Srivastava (RSA) | 28-Nov-2011
- **Sector Manager:** Michel Audige (SM) | 09-Dec-2011