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**AFRICAN DEVELOPMENT
BANK GROUP**

PROJECT: Road Sector Support Project 1
COUNTRY: Tanzania

ESIA SUMMARY

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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

SUMMARY

TANZANIA

Project Name: Road Sector Support Project 1
Country: Tanzania
Project Number: P-TZ-DB0-017

1. Introduction

The project comprises construction to bitumen standard two roads (i) Iringa – Dodoma and Namtumbo – Tunduru. The two roads have a combined total length of approximately 453 km. According to the ADB's Environmental and Social Assessment Procedures (ESAP), the project is classified as Category 1 which calls for a full ESIA (Environmental and Social Impact Assessment) to be carried out. In addition, over 200 persons will be involuntarily displaced and large amounts of assets destroyed in the two roads, respectively. For that matter a full Resettlement Action Plan (RAP) has been prepared. This Summary, therefore, presents the assessments of the two roads and attached is an Annex of the Summary of the RAPs prepared for the two roads. The Summary shall present: the Project Description and Justification; Policy, Legal and Administrative Framework; Description of Project Environment; presentation of Project Alternatives; Potential Impact and Mitigation/Enhancement Measures; Environmental Management Plan; Monitoring Program; Public Consultations and Disclosure; Conclusion; References and Contacts; and as an Annex the RAP Summary.

2. Project Description and Justification

The project consists of upgrading to bitumen standards, two distinct engineered gravel / earth road sections, 453km long, with a general cross-section of 6.5 m carriageway and 1.5 m shoulders. In addition, there will be road side and cross drains as required. All bridges will have widths of 6.5 m (two traffic lanes), protected foot path of 1.5 m width on both sides of the bridge, and guardrail. The proposed design speed on the rural sections in flat to rolling terrain is 100 km/h; and 50 km/h in urban areas and through villages, in accordance with the Road Design Manual. For rolling/hilly terrain the design speed will be 80 km/h and in mountainous terrain 60 km/h.

The project roads are located in the central and southern part of Tanzania, within Dodoma, Iringa and Ruvuma Regions and traverse the following districts: Dodoma Municipality, Chamwino District, Mpwapwa District, Iringa Rural, Iringa Municipality, Namtumbo District and Tunduru District. The project road comprises two distinct sections, namely the Iringa - Dodoma section, approximately 260 km long, and the Namtumbo - Tunduru section, which is about 193 km in length. The Iringa – Dodoma Section forms a part of the Great North Corridor running from Iringa to Arusha via Dodoma and Manyara Regions, while the Namtumbo – Tunduru Section forms part of the Trunk Road linking Masasi (Mtwara Region) to Tunduru – Songea – Mbamba Bay Port at Lake Malawi. The Namtumbo – Tunduru Section also facilitates cross border trade with Malawi through Mbamba Bay Port and Mozambique through the Unity Bridge – Mtambala, Masasi District. The road is also used by tourists while traveling to Selous Game reserve.

The main physical components of the project road will be:

- Approximately 26 Km length of realignments of the centreline on the Iringa – Dodoma Section to improve grades, curvature and sight lines, generally within the existing Right of Way. The Namtumbo – Tunduru Section largely follows the existing alignment;

- Construction of new road where none exists at present, or where length can be reduced by creating short-cuts, or to bypass existing settlements;
- Construction of new bridges, culverts, drifts and repair or replacement of existing bridges, drifts and culverts.
- Other structures such as lined and unlined side drainage channels, culvert intakes, outfall protection, gully control measures minor, river training works, and possibly short lengths of retaining wall.

The major purpose of the project is to construct an all weather bitumen road that will promote economic development in Central and Southern Tanzania to meet the following objectives:

- To promote economic development of the project areas by linking it with other regions of Tanzania and the neighbouring countries;
- To serve as an international transit route which forms part of the Great North Corridor (T5) from Iringa to Arusha to Nairobi via Dodoma;
- To serve as national link between Ruvuma, Iringa, Dodoma and Arusha Regions.

3. Policy, Legal and Administrative Framework

The study has been guided by the NEMC's EIA Guidelines (March 2002), MOW's Environmental Guidelines for the Road Sector (December 2004), the AfDB's Policies on Environment and Involuntary Resettlement, and the World Bank's Operational Policies on Environmental Assessment (OP 4.01), Natural Habitats (OP 4.04), Forests (OP 4.36), Involuntary Resettlement (OP 4.12) and Cultural Property (OP 11.03)

Tanzanian's environmental assessment framework is guided by the following two key national legislations:

- The Environmental Management Act (EMA), 2004,
- The Environmental Impact Assessment and Audit Regulations, 2005

Tanzanian's key environmental assessment and monitoring agencies in the Road Sector include the following:

- Minister responsible for Environment (Vice President Office - VPO), The Minister is responsible for approval of the Environmental Impact Assessment
- National Environmental Management Council (NEMC). NEMC has the overall responsibility of undertaking enforcement, compliance, review and monitoring of Environmental Impact Assessment and in this regard facilitates public participation in environmental decision-making.
- Road Sector Environmental Section (RS-ES) under the Ministry of Infrastructure Development. The RS-ES oversees management of environment within the road sector and the preparation / implementation of EIA required in the road sector.
- District Council (DC). The District Council' Environmental Management Officer is responsible to promote environmental awareness in the district related to the protection of the environment and the conservation of natural resources.
- Village Development Committee (VDC). The VDC is responsible for the proper management in the village.

National policies on environment, land, transport, wildlife, forests, water and culture relevant to this project have been considered, as also various international treaties and conventions on natural resources that Tanzania has ratified. The main legal instruments applicable to environmental and social management with respect to this particular road project are:

- The Environmental Management Act (EMA) No. 20 of 2004
- The Environmental Impact Assessment and Audit Regulations of 2005
- Environmental Impact Assessment (EIA) procedures (March 2002)
- Environmental Assessment (EA) and Management Guidelines for Road Sector (2004)
- Land Act of 1999
- Land Regulations 2001
- Village Land Act of 1999
- The Land Acquisition Act of 1967 and the Land Ordinance
- Land Use Planning Commission Act
- Town and Country Planning Act Cap 378
- Wildlife Conservation Act, No 1974
- Protected Public Places and Recreation Areas Act (1969)
- Forest Act, 1957 (Revised in 2002)
- The Mining Act, 1998. No. 5 of 1998
- Highways Ordinance Cap 167.

4. Description of the Project Environment

Physical Environment

Climate: The Iringa – Dodoma road section traverses through moderate, semi arid and arid climatic areas with an average annual rainfall of 500 mm between Nduli and Dodoma and 650mm between Nduli and Iringa. Tunduru is characterized by an average annual rainfall of 943 mm, whereas Namtundo receives an average annual mono-modal rainfall of about 1000 mm between November and May. The averages day time temperatures varies from 20 to 25° C, whilst night temperatures are between 15 and 17°C

Topography: The Iringa - Dodoma Road generally traverses flat/rolling and rolling/hilly terrain. The road also passes through Nyang'oro escarpment (15 km) and near Mtera Dam (Iringa/Dodoma border) where the gradient reaches up to more than 10 % for short sections of the road. The topography of Namtumbo – Tunduru Road Section is characterised by undulating topography, which is dissected by a number of rivers and drainages. There are few areas which have steep slopes.

Geology: The geology of the project area can generally be classified as sedimentary with metamorphic rocks such as limestone including travertine. These occur as either of the following: marble, quartzite, graphitic schist, chlorite, amphibone, mica and kyalite schist, hornblende, bitite and garnet, gneiss, acid gneiss, granulate or charnokite.

Soils: The soils from Iringa are sandy loam to clay loamy soils in some areas. Most of the farmlands are on sandy loams with some black cotton soils in the low lands. Black cotton soils characteristically host Acacia woodland particularly in the area from Kihorogota to Nyang'oro. Closer to the Nyang'oro escarpment the soils change to more sandy and gravel texture all the way to the foot of the escarpment. The soils of the Namtumbo – Tunduru Section are dominated by clayey loam soils. Nevertheless, patches of sandy soil can be seen between Tunduru and Masonya villages.

Hydrology: The main water source in Iringa and Dodoma is the Great Ruaha River. The Mtera dam on the Great Ruaha River provides water to Iringa and parts of Dodoma Region. Other water sources include seasonal run off from Nyan'goro escarpment, which provides water to Nyang'oro and Kihorogota villages. Mkalama Lake at Nyang'oro village also serves as a water reserve. In Dodoma region a number of seasonal streams cross the road. The Namtumbo – Tunduru Section traverses through a number of rivers and streams. The major permanent rivers include; R. Luinga, R. Nampungu, R. Nambunju and R. Masonya.

Utilities and Services: The main public utilities along the project roads are water supply and power lines. A few mobile telephone communication masts are present in the project regions. Iringa and Dodoma Municipalities are served by the municipal water reticulation network. In Iringa rural, there are some areas served by water pipes up to Nyang'oro, after that there is no piped water supply along the project road. In Namtumbo – Tunduru Section, most of the villages along the project road obtain domestic water supply from either shallow wells or / and gravity scheme.

Biological Environment

Ecosystem: The project area is located within the Acacia-Savannah Grasslands Ecological Zone. The main natural vegetation types are: forest, woodland, bushland and grassland. The biodiversity of this zone is moderately rich in flora and fauna, because of severe deterioration of the rangelands due to overstocking, and heavy poaching. The Iringa – Dodoma Road Section is influenced by the Ruaha ecosystem whereas the Namtumbo – Tunduru Section is influenced by the miombo woodland ecosystems in Selous and Niassa Game Reserves.

Land Use: The following land uses were identified in the project area: urban and village centres; agricultural land; bushland; grassland and protected areas for wildlife management area, national Game Reserve for wildlife (Selous Game Reserve), grazing land, farming land, and forests. Others are: conserved (water catchment areas, lakes, riverbanks, steep hills etc), open areas (recreational etc), residential, commercial, communal (housing various public and private institutions).

Conservation Areas: There are several forest reserves close to the project road, namely Nyangoro Forest Reserve, Chamdindi Forest Reserve and Nduli Protected Forest Reserve all in Iringa District. The famous game reserves include Selous Game Reserve, Matogoro 'B' mountain rain forest and Likingo hydro-electric falls which are also significant areas for tourist attraction in Namtumbo District. Mwambesi Game Controlled Area and Muhuwesi Game Controlled Area are found in Tunduru District. There are also open areas for tourist hunting such as Sasawal and Mischela open areas in Tunduru District.

Vegetation: In Iringa, the dominant vegetation is woodland and thick grassland. However most of the Iringa – Dodoma Section is dry wood and dry scattered vegetation particularly in Dodoma Region. The flora of the Namtumbo – Tunduru Section is characterized by mosaics of grasslands, wooded grassland, Miombo woodlands, cashew trees, and exotic strip trees vegetation.

Fauna: Wildlife habitats are present in the project area. Most animals along Iringa – Dodoma Road are found within Nyan'goro protected Forest Reserve. The Forest accommodates animals such as Elephants, Leopard, Deer and Monkeys. In Namtumbo – Tunduru Section, major wildlife species include but are not limited to African elephant, sable antelope, duiker species, eland, Liechtenstein's hartebeest, greater kudu, leopard, lion, spotted hyena, Cape buffalo, warthog, waterbuck, wild dog, Niassa wildebeest and zebra. Minor species include

aardvark, yellow baboon, bushbuck, bush pig, porcupine, klipspringer, reedbuck, pangolin, and African hare.

Rare and Endangered Species: The presence of rare plants and animal species is important for two reasons. Firstly, changes in land use may cause or contribute to species extinction and degradation of the natural resources. Secondly, recent changes to Tanzanian legislation (notably the Tanzania Forest Policy 1998, Tanzania Forest Act 2002 and Wildlife Policy 1998, Wildlife Management Area Act 2004) give legal protection to red-listed plant species and animal species respectively.

The IUCN Red List of threatened and endangered species of 1990 included two species that are present in Selous – Niassa Wildlife Corridor. These species (with their status in parentheses) include the African elephant *Loxodonta africana* (Vulnerable) and the African hunting dog *Lycaon pictus* (Endangered).

Socio-cultural Environment:

Population: Based on 1998 Population Census from bureau of statistics the total population of Iringa and Dodoma was 1,208,914 and 1,693,819 respectively with majority of people living in rural area. According to 2002 Census, Namtumbo district was estimated to have a total population of 185,051 people whereas Tunduru District had a total population of 247,055.

Ethnic groups: The main ethnic groups in Iringa region are the Hehe, Bena, Kinga and Pangwa. Hehe is the main tribe, which constitute about 43% of the population in the region. In Dodoma the main tribes are Gogo, Rangi, Nguu, Zigua, Kaguru and Sagara. In Namtumbo district, the major ethnic groups are the Wandendeule and Wayao in Tunduru district.

Education: Adult literacy in both Iringa and Dodoma regions range from 59% to 63%. Primary school coverage is generally good in the project districts with each village having at least one or more primary schools. Primary school enrolment figure is 96.7% and 94.0% in Iringa and Dodoma respectively. More boys than girls are enrolled in rural areas by 2.6%; while the enrolment is the same in urban centers. Absence from school is common; some of the reasons given include working in agriculture farms, petty business and youth migration to big farming and business centers. Enrolment to secondary schools has recently improved with each ward having at least one secondary school.

Educational attainment levels in the Namtumbo district are low due to: the tendency of parents enrolling over aged children; poor infrastructure (classrooms); low awareness on importance of education; poor school learning environment. The district has 103 primary schools and 21 Secondary Schools, 16 secondary schools owned by Government. A total of 44,669 pupils are enrolled in primary schools. There are 684 teachers in primary school and 95 teachers in secondary schools.

Tunduru district has 140 primary schools and all are owned by the government. A total of 57,958 pupils are enrolled in the primary schools and 50.9% are boys and 49.1% girls. The district has 1,095 teachers, 871 classrooms with a shortfall of 916. The district has 14 secondary schools with 12 owned by the government. There are 139 teachers in the secondary schools with a shortfall of 132 teachers. Many teachers have turned down employment in the district because of transport problems and fear of wild animals. Major challenges facing the education sector in the district include: shortages of teaches, teacher houses, desks, classrooms. Other challenges include education not valued by people in the district, long distances to schools etc.

Health: The prevalence of HIV/AIDS is high in Iringa District. According to Tanzania Household Indicators Survey (THIS, 2004) the Iringa regional prevalence rate is 13.4% and Dodoma is 4.9%. During the reported factors contributing to new HIV infection is polygamy (commonly known as *Mitala*), widow inheriting, ignorance of traditional healers, and low household income. Inadequate availability of services such as HIV information, peer education, location VCT facilities, unavailability and high cost of condom which is TZS 300/= per pack.

Namtumbo district has 5 health centers and 35 dispensaries. Among the diseases, which are causing deaths; malaria at the top and followed by pneumonia. Other main diseases are: diarrhoea, eye, ear and skin diseases, heart conditions, HIV/AIDS and diabetes. Tunduru district has a total 3 hospitals (1 is government owned and 2 are owned by religious organizations); 5 health centers all owned by the government and 35 dispensaries (31 are government owned). Major health problems are: malaria, eye, ear diseases, worm infections, kwashiorkor, diarrhoea, bilharzias, anaemia.

Water and Sanitation: In Iringa and Dodoma Districts, pressure in domestic water is high, leaving about 60% of the population without clean and safe water supply. In the area along the road reserve the price of a bucket of water is between TZS 150/- and TZS 200/- , which is not readily affordable by most. Most have to walk not less than 300 m to fetch water from shallow wells, Mtera dam and springs. This leads to increased incidences of water-borne and water-related diseases up to an average 39.4% in Iringa and Dodoma regions.

Namtumbo District Council has managed to supply water to cover 54 villages out of 61 at different service levels. Tunduru district has a total of 541 hand-pumps, 3 diesel pumps, 5 electricity driven pumps all of these are shallow wells. The district has 8 gravity water schemes and 2 hydram pumps. Sixty percent and 58% of people in urban rural and urban areas have access to clean and safe water respectively.

Economic Activities: A major economic activity in Iringa – Dodoma Section is agriculture, both crop and livestock production. Smallholder farmers with 1 to 4 acres dominate crop production, and livestock keepers own from 15 to 800 heads. Farming is seasonal, dependent on the annual rainfall patterns.

The major economic activity in Namtumbo – Tunduru Section is agriculture which employs about 95% of the total population. Only 10% of all arable land is under cultivation with small holders dominating. Agriculture in Namtumbo is mainly at subsistence level and major crops include maize, sunflower, simsim, cashew nuts, paddy, cassava and Coffee. In Tunduru District the main cash crops include: cashew nuts, tobacco and oil seeds. Crop cultivation in the districts is characterized by low yield partly because of low levels of technology and inadequate use of farm inputs.

5. Project Alternatives

For road projects there are somewhat limited alternatives, unless to maintain as a gravel road. The 'no project' alternative implies that both the Iringa - Dodoma road and Namtumbo – Tunduru Road is not upgraded. This will retard socio-economic development in the project regions. Furthermore, the administrative capital of the country, Dodoma will remain with poor access from the southern regions limiting access to distribution of goods and services. There will be minimal impact on the environment if the No project alternative is considered.

The project study has considered and proposed several realignments to the existing Iringa – Dodoma road. The Namtumbo – Tunduru Section largely follows the existing alignment.

6. Potential Impacts and Mitigation/Enhancement Measures

Overall, the hydrology and drainage of the road will be improved due to the upgrading of the road structures, such as bridges, culverts and other cross-drainage facilities like roadside drainage. The most important modification to the hydrological regime by the project road will be due to the raising of the road section at several sections. While this will allow permanent utilisation of the road, it could affect the duration of the flooding event, as the road may act as a dam and impact on the vegetation. The provision of appropriate and a sufficient number of drainage structures will mitigate this problem. Further water flow in the streams should not be hindered during construction.

Soils along the existing road are moderately to highly erodible, and along some sections gullying has been noted, both along the side drains and at culvert outfalls. Poor vegetation cover exacerbates the situation. Concentrated drainage flows along the project road are often the cause of erosion, and upgrading of the road could worsen the existing situation. Proper design (providing for erosion prevention measures) and maintenance during the operation are critical for mitigation. Earthworks, excavation of borrow pits, construction traffic and bush clearing will have visual impacts. This can be mitigated by rehabilitating disturbed areas as and when they are no longer required for the works and cleaning up after completion of works.

Water for construction and for potable supplies is limited along most of the project area. The challenge of locating adequate water supplies indicates that potential direct impact on water resources will be highly significant. The Contractor must, among other measures, avoid using water from, or flowing into, environmentally sensitive areas; avoid digging along riverbanks or lakeshores; use a piped system to extract water from river or lake; locate the pipe intake in deep water (2 m) and 500 m far from sensitive habitat; avoid using machinery (such as pumps, tankers) within the 60 m protection area along the watercourses; in case of oil pollution, stop construction activities and recover the pollutant before it reaches the lake; uninstall equipment and restore the site (riverbank, lakeshore) immediately after completion of the construction work in that area; avoid washing construction equipment at the water pump or transfer station; locate ponds created for the road project more than 250 m from the road.

Air pollution from vehicle exhaust emissions is not considered a significant environmental issue in rural areas due to the good dispersion of pollutants and the relatively low number of vehicles. However, in Iringa and Dodoma towns, an increase in traffic levels will contribute to a long term to significant environmental impact. Emissions of carbon dioxide may increase during the operation phase, which will lead to an impact on climate change. Proposed mitigation includes maintenance of machines and vehicles in good condition and reduces unnecessary idling of vehicles. In the medium to long term the project may consider planting trees which act as carbon sinks. Normal traffic would create high levels of dust during the construction period along the entire road as well as along the deviations throughout the long dry season, until paving has been completed. Dust in quarries and at crushers could present a health hazard to the workforce. Dust is strongly linked to respiratory disease. It can be reduced by controlling earthworks, construction traffic, and where water is available, by sprinkling exposed areas and deviations with water twice everyday during construction.

During construction, noise will be created by construction activities and traffic, while during operation; noise will emanate from engines and exhaust systems of large trucks, and the interaction of tyres with the road surface by trucks, buses, and private autos. It is estimated that road traffic will double and vehicle numbers and speed will greatly increase. A large portion of the traffic will be composed of trucks and buses. Also, traffic could increase more dramatically during the night causing high levels of disturbance to sleep, but this will be limited to the area alongside the road. Impacts from noise can be mitigated by adhering to a daytime work schedule, maintaining plant and equipment and mufflers, controlling the speed of construction equipment in residential areas, providing PPE to workforce and locating new residential areas more than 500 m from the road.

Vegetation loss will arise from clearance of land needed for the permanent works and for temporary use during construction (deviations, camps, quarries, etc). Some may be natural (grassland, shrubland, woodland) but the majority of affected vegetation is crops or secondary growth. Very little or no riverine or wetland vegetation would be directly affected. However, the workforce's requirements for fuelwood and charcoal could affect local forest areas. Mitigation includes minimising vegetation clearance and confining it to within the road reserve, avoiding locating temporary project infrastructure (borrow pits, access roads, quarries, construction camps, storage areas) in woodlands and wetlands; re-vegetating affected areas to prevent erosion and to provide a useful after-use of the affected land; instructing the Contractor to provide alternative fuel sources, or establishing centralized canteens at the camps.

Forest Reserves in the project area will also be affected by increased pressure for timber, fuelwood and charcoal. This degradation is unlikely to result in any plant species extinctions. However, it would encourage erosion, affect hydrology, contribute to desertification and degrade or destroy wildlife habitats. Deforestation in the project area can only be avoided or minimised by establishing effective land use controls and on-the-ground enforcement capability in the potentially affected areas, and through the continuous involvement of the local communities.

The Selous - Niassa Wildlife Corridor is critical to maintaining wildlife movement from Selous Game Reserve southwards to Niassa Game Reserve. The road project may impact the Wildlife Corridor as it will encourage encroachment of the population along the road and increase of number of vehicles and speed of road traffic. During construction, direct impacts on wildlife will result from habitat destruction, exclusion from water sources if used for construction purposes, and disturbance due to noise, dust, light and construction traffic. Temporary infrastructure (eg. deviations, borrow pits) could also impact on wildlife habitats. Creation of ponds will attract livestock into the wildlife corridor and destroy the vegetation.

During project operation, **direct impacts** will include road kills, the barrier effect and disturbance by lights, noise and traffic. Mitigation will necessitate prohibiting any development along the project road, police surveillance, confining construction activities to within the construction corridor, avoiding the destruction of natural vegetation along the road, forbidding the use of borrow pits, deviations, construction camps, storage facilities, ponds in the wildlife corridor and Wildlife Management Area, reducing the slope of the bank of the road to facilitate the movement of wildlife, and introducing speed control measures along the section of road that crosses the wildlife corridor.

Construction of the roads will require large quantities of excavated construction materials. Borrow pits should not be located in or near environmentally sensitive areas, but should be located more than 250 m or more from the centre of trunk road or any regional roads and 500 m or more from settlements. Access needs to be controlled, and the sites should be protected. Road construction activities will create large quantities of wastes in the form of spoil, dry material and hazardous wastes. These must also be responsibly disposed of in accordance with the Standard Specifications for Road Works.

The main issues related to the Workmen's /Contractors' camps will be demand for water and fuelwood, and disposal of solid and liquid wastes. Provision for properly dealing with these issues must be made. Water must be provided for the workforce, and the use of the source should not create conflicts with the local communities. Effluent discharges must comply with national standards, while land fill sites must be located away from sensitive and inhabited areas, and properly managed. Once the project is completed, all work areas and offices, storage and repair sites, and other temporary installations must be cleaned and restored. A rehabilitation plan must be prepared and approved by the Supervising Engineer. The rehabilitation plan must ensure that damaged areas are restored and the sites are compatible for potential future uses.

Settlements will be affected in a number of ways. There will be a temporary influx of people into the project area, which may cause antagonism among the local inhabitants, and raise security concerns. The Workmen's /Contractors' camp may also provide a nucleus for a new settlement. Unplanned ribbon development is likely to occur along the length of the project road. The major trading centres will also expand as a long term impact from improved communications. To address this, district land officers and physical/town planners must allow for possible expansion of trading centres within the area of influence of the project road in their annual work plans. Residential, commercial and industrial areas will need to be clearly demarcated, and ribbon development must be controlled. With regard to security concerns, the village and ward councils should be made aware of this, so that they can plan to address the situation.

The most significant **social impact** will result from loss of land, property, crops and business, due to the acquisition of land for new alignments, and for properties destroyed by construction activities. One major bypass and three major realignments have been proposed: a link joining the Iringa - Dodoma Road. The Dodoma bypass will have positive significant impacts in terms of the number of residential structures affected, reduced congestion in the urban areas, the reduction of pollution (dust, noise) from the construction activities as well as the improvement of road safety during the construction and operation, but will also result in loss of land, property and crops, and isolation and loss of business.

Livestock plays a significant role in the economy of the project area and its area of influence. Livestock is trekked along the project road to markets, and therefore all along the project road a number of livestock crossings are evident. There are livestock watering points where large numbers of animals cross the road to reach the water. As a result of the upgrading of the project road, it is anticipated that more vehicles will ply the road, thereby posing a hazard

to livestock and vice versa: accidents involving vehicles and livestock are likely to occur more frequently. A livestock underpass is therefore proposed at selected locations, while warning signs and rumble strips will be placed at all the other major crossing points.

With an improved road it is expected that the number of road accidents will increase, and pedestrians, wildlife and livestock will be constantly exposed to danger. Warning signs, speed limits and humps and/or rumble strips must be installed at urban centres, schools, hospitals, major livestock crossings and along the Selous - Niassa Wildlife Corridor. Emergency services in the health facilities along the road must be prepared for this. A road safety awareness campaign must be implemented during and after construction, targeting all the local communities, including school children, teachers, parents, patients, hospital staff, etc.

While access to health care will improve, interaction between the immigrant workers and the locals may exacerbate the spread of HIV/AIDS and other sexually transmitted infections. The Contractor's workforce must be sensitised with regard to behaviour and conduct, and an HIV/AIDS Awareness Campaign must be implemented.

7. Environmental Management Planning

The Environmental and Social Management Plan (ESMP) and Resettlement Action Plan (RAP) describe the proposed implementation arrangements for mitigation measures, environmental and social monitoring and reporting arrangements. A number of special ESMP activity areas are elaborated below under Complementary Initiatives (See below, Section 10).

TANROADS, assisted by environment specialists, will be responsible for reviewing civil works contracts in accordance with the ESIA report; coordinating the implementation of the ESMP among the contractors, local environmental authorities (e.g., District Councils and Village Development Committees; monitoring the implementation of the ESMP and the civil works contracts in collaboration with local NEMC and RS-ES; and preparing semi-annual and annual environmental progress reports.

The cost of standard construction mitigation measures have been integrated into the Project's Bills of Quantities.

Description	Estimated Cost (US Dollars)
Resettlement & Compensation	1043000
Environmental Mitigation	230000
HIV/ AIDS Awareness	200000
Road Safety	150000
Afforestation	75000
RAP Implementation	50000
Monitoring	50000
Total	1798000

The total project cost for environmental mitigation and monitoring, the HIV/AIDS campaign and compensation and resettlement is estimated at US\$ 1.798 million.

8. Monitoring Program

The purpose of environmental and social monitoring is to quantitatively measure the environmental effects of the road project. The environmental monitoring program will operate through the preconstruction, construction, and operation phases. It will consist of a number of activities, each with a specific purpose, key indicators, and significance criteria. Environmental monitoring will take place through the preconstruction, construction, and operation phases. The following aspects, each having a specific purpose, defined key indicators, and significance criteria, will require monitoring:

- Land use changes in the Selous - Niassa Wildlife Corridor
- Changes in forest cover
- Road safety
- HIV/AIDS prevalence rates
- Changes in socio-economic wellbeing.

The monitoring of mitigation measures during design and construction will be carried out by the Supervisor's Environmental/Social Specialist. He/she will conduct mitigation monitoring as part of the regular works inspections. The responsibility for mitigation monitoring during the operation phase will lie with the Environmental Section in TANROADS.

TANROADS will provide MOID RS-ES with reports on environmental compliance during implementation as part of their semi-annual progress reports and annual environmental monitoring reports. MOID RS-ES will forward these reports to NEMC and the Funding Agency. Depending on the implementation status of environmentally sensitive project activities, NEMC will perform annual or biannual environmental reviews in which environmental concerns raised by the project will be reviewed alongside project implementation.

9. Public Consultations and Public Disclosure

Field visits were conducted by the Consultant's Environmental and Social Team. Consultations were held with the municipal, district and village authorities in the project area, as well as with road beneficiaries and the general public. Existing and potential environmental and social concerns were investigated through a social (household) survey conducted for 1244 households.

During the field visit, public consultations were held with municipal, district and village authorities in the project districts. Household surveys were conducted for each project affected person. The benefits associated with upgrading the project road were cited as being:

- More transport options, leading to cheaper and more reliable transport;
- Better communication with other areas;
- Better access to markets (for both crops and livestock), agricultural inputs, agricultural extension services, leading to greater agricultural productivity;
- Improved access to social services (particularly health facilities)
- A resultant improvement in trade and commercial activities;
- Employment opportunities on the road.

The main concerns highlighted by the public were:

- Loss of land and property, and the resulting resettlement and relocation;
- Linked to the above, the timing and monitoring of the compensation process;

- Loss of business due to new alignments bypassing existing centres;
- Spread of HIV/AIDS;
- Increased disposable income leading to alcoholism and further encouraging the spread of HIV/AIDS;
- Increase in the number of road accidents;
- Child truancy (as the road may encourage children to seek employment on road-related activities).

10. Complementary Initiatives

Resettlement/Compensation (RAP). Its estimates for compensation are based on engineering and PAP surveys conducted by the Study Team. 1244 households are affected due to the proposed realignments. The total resettlement and compensation cost for the properties affected by the project is approximately TShs 1.356 billion (US\$ 1.043 million). The project RAP Summary is separately presented to this ESMP Summary.

Selous - Niassa Wildlife Corridor. This programme is designed to mitigate and monitor the land use changes in the SNWC and especially parameters that the construction is likely to influence, for example deforestation, encroachment and wildlife road kills. The activity will also monitor the efficiency of measures such as the vehicle speed reduction and subsequent impacts on the number of wildlife kills. The activity will run during preconstruction, construction, and operation. The activity will support the District Councils in conducting baseline studies on forest resources (mapping, etc.) and enforce control measures for charcoal production and logging. The activity will continue during construction and operation to determine if significant changes to the forest cover have occurred. Significant change will be determined by comparing forest resource inventories between pre-construction, construction, and operation phases

Road Safety Campaign. This activity will mitigate and respond to the potential impacts of the project on road safety. It will review the approach and methodology for the road safety awareness campaign and monitor the effectiveness of the proposed mitigation measures. The activity will take place during construction and operation, and will recommend new mitigation measures where those proposed are not effective.

HIV/AIDS Component. The activity will involve implementation of the proposed HIV/AIDS Awareness/Prevention Campaign and review of the approach/methodology and the effectiveness of the proposed mitigation measures. The activity must continue during construction and operation to determine whether the campaign has been effective, and propose new approaches and strategies as appropriate.

Afforestation Program. This activity will involve implementation of tree planting through the involvement of Village Development Committees, CBOs, and the municipalities. Approximately 25,000 seedlings will be made available to replace the damage caused during implementation and also as part of environmental enhancement.

11. Conclusion

The upgrading of the Iringa - Dodoma and Namtumbo – Tunduru Road is essential for the development of the economy of Iringa, Dodoma and Ruvuma Regions. The road project will improve access to social and health services not only for the population located immediately along the road, but also for those within the larger area of influence of the project road. Moreover, the upgrading of the road will also benefit to centre like Dodoma, Arusha and Mtwara Port. The road project will strongly contribute to alleviate poverty in the project regions, provided the negative impacts identified are adequately mitigated.

Most of the project negative impacts can be mitigated with appropriate measures. Involvement of TANROADS, the Contractor and the district authorities as well as the village authorities and the local communities will be required to implement and monitor the mitigation measures. Monitoring of environmental and social impacts will be important in ensuring sustainable development in the project regions.

The road will present temporary employment opportunities so care must be taken to ensure that as far as possible members of the local communities (including women and youth) are employed on the construction project. Diligence on the part of the Contractor is critical for ensuring that environmental and social impacts are minimised. Furthermore, maintenance of the road and monitoring of key impacts will serve to check adverse impacts during operation.

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ESIA SUMMARY ANNEX**RESETTLEMENT ACTION PLAN (RAP) SUMMARY
FOR COMPENSATION AND RELOCATION**

Project Name : Road Sector Support Project I
Country : Tanzania
Project Number: P-TZ-DB0-017

1. Description of Project and Project Area

1.1 The project covers two roads (i) Iringa – Dodoma (260 km) and (ii) Namtumbo – Tunduru (193 km) which are located in Dodoma Region in central part of Tanzania and Ruvuma Region in the southern part, respectively. The Iringa – Dodoma road traverses Dodoma Municipality, Chamwino and Mpwapwa districts; and the Namtumbo – Tunduru road traverses Namtumbo and Tunduru districts. The project in both roads entails upgrading of the roads from gravel to bitumen standard. In the process of acquiring the road reserve and Right of Way (RoW), the project works shall involve involuntary resettlement of the populations living in the project area and destruction of property crops and trees. Among the components and activities shall include implementation of the ESMP, road safety education, HIV/AIDS prevention and awareness, environmental protection and ecological impact mitigation measures which will be integral parts of the project.

2. Potential Impact

2.1 While the road alignments will be maintained, there will be inevitable shifts in order to improve the road geometry and also to improve different aspects of the road and widening where necessary. These and other requirements during the roads upgrading will result in some land being acquired both temporarily (during construction) and on a permanent basis. Social dislocation and displacement will occur where the project road will require realignment, expansion, geometric improvements and detours within the construction corridor. Approximately 1244 households will have either houses or other types of properties affected. It is estimated that each household has an average of 5 persons which translates into approximately 6220 persons being affected by upgrading of the two roads. Most of these lie in the urban areas of Dodoma, Iringa and Namtumbo.

2.2 The major part of the properties are located in the rural areas where the roads traverse approximately 27 small towns and village between Dodoma and Iringa, and 6 wards between Namtumbo and Tunduru. Most of the assets, therefore, are traditional houses built in with mud, poles and thatch roofs, although a few are made of burnt and un-burnt brick roofed with iron sheets. Among the affected structures are prayer houses (mainly mosques) and several graveyards especially around Dodoma area. There will be some adverse impacts that may occur with the roads project. As is the case in many other transport projects, the spread of HIV/AIDS and other sexually transmitted diseases will be exacerbated by the project both during construction and during operation. Road accidents are another area of concern especially after the roads have been open to traffic.

2.3 The two roads will have great benefits to both populations living in the said districts and regions and also in a broader context of the two roads being part of regional corridors. The Dodoma – Iringa road is part of the Great South/North corridor which stretches from Cairo to Cape Town; and the Namtumbo – Tunduru road is part of the Mtwara corridor which connects the Northern Part of Zambia and that of Malawi to the port of Mtwara. The Iringa area is well known for its maize production and is the location of the strategic grain reserves in the country. Livestock is one other major agricultural activity but also is the rapidly becoming important growing of grapes which are a important input to the wineries in Dodoma and surrounding places. At the boundary of Dodoma and Iringa is the Mtera dam and hydro power plant which is the major source of electricity for Tanzania. The dam has sizeable quantities of fish which is a major source of income and protein for the people living in the area. The roads, once completed, will result in improving transportation systems and make it easier for populations in the zone of influence to access health and educational facilities and markets for both

inputs and produce. All these activities shall culminate in improving the living conditions of the people and contribute towards poverty alleviation so long as the negative impacts are effectively mitigated.

3. Organizational Responsibility and Implementation of the RAP

3.1 Several parties will be involved with the resettlement and/or compensation processes at different levels and times. At national level, TANROADS have overall responsibility for planning and implementing all activities under the Policy Framework; and will have the control and management of the project resettlement budget. The Ministry of Infrastructure Development, however, will provide funds for the resettlement program for the project from the national budgetary allocations. The Ministry of Lands and Human Settlement provide guidance on land allocation, surveys and plot demarcation. During plan execution, TANROADS shall liaise and seek the support of the Regional and District Councils, District Lands Officers, the Ward Councils and the Village Governments of Councils. TANROADS is the implementing agency for the project and is therefore also the lead agency for implementing all resettlement and compensation activities. In so doing, TANROADS operational procedures will be linked closely to those prescribed by Lands Policy, the Lands Act No. 4 of 1999 and AfDB Policy (2003) on involuntary resettlement.

3.2 While the overall responsibility lies with TANROADS, the execution of the RAP will be done in collaboration with the Social Services Committees which are chaired by the District Executive Officers. The District Social Services Committees are assisted by the Ward Executive Committees and the Village Executive Committees who have responsibility for rendering support and monitoring of the practical day-to-day implementation of the resettlement activities, including the disbursement of compensation.

4. Consultations with the Public and Local Authorities

4.1 During the process of the ESIA and RAP preparation, various consultations took place in several places in addition to the survey of Project Affected Persons (PAPs), the Consultant conducted. Consultations and participation of the affected communities and PAPs was necessary to ensure that the information relayed to them about the project is as accurate as possible and timely before resettlement and compensation would take place. Affected persons, communities and organizations included the statutory bodies such as District and Regional representatives of the public who would be involved in various ways as impacted institutions but also as those that may be called upon during implementation of the RAP, the other group is the government institutions like schools, health centers and others that may be affected by the project. The final group is the people living in the vicinity of the roads project itself who are most directly affected by the project. These included villages' council leaders as well as individual villagers living along the project area. NGOs/CBOs and faith based organizations were also consulted. Since the type of move shall basically be stepping back within the compound or obtaining a plot within the municipality, there would be no distinct host communities necessitating specific consultations. In addition, feedback obtained indicated that the Project Affected Person (PAPs) would continue to use existing social facilities such as schools, hospitals, mosques, churches, etc.

4.2 Several recommendations were made during the consultations which were aimed at minimizing the negative impacts of resettlement such as: (i) ensuring that the decisions regarding the road alignment are finalized and agree upon "cut-off" date, (ii) adequate time is allowed (of approximately 6 months) after compensation is paid to enable PAPs resettle and build new homes where necessary, (iii) timing of movement be during dry season to ensure that movement is not hampered by rain but also to ensure that people have completed harvesting, (iv) call for efficiency and transparency in the compensation process to be achieved through communication and participation of all PAPs, (v) need for social support from local governments, civil society to ensure that socially dislocated persons establish new livelihoods and that vulnerable (elderly, youth, women heads of households, people with disabilities) receive necessary help throughout the resettlement process, and (vi) establish the mechanisms for redress of grievances that will be most appropriate for the affected communities.

5. Institutional and Legal Framework

5.1 Currently there is no Resettlement Policy in Tanzania, however TANROADS process is guided by the Land Regulations of 2001. The Government has a draft National Resettlement Policy Framework which was prepared in 2003 based on the World Bank's OP 4.12 on Involuntary Resettlement (which is consistent with the AfDB Involuntary Resettlement Policy, November 2003), and requires that (i) involuntary resettlement should be avoided or minimized where feasible, or explore all viable alternative project designs; (ii) if not feasible, resettlement activities should be conceived and executed as sustainable development programs where PAPs share in project benefits; (iii) displaced persons should be fully consulted and have opportunities to participate in planning and implementing resettlement programs; and (iv) displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

5.2 The policy covers direct economic and social impacts resulting from projects caused by (a) The involuntary taking of land resulting in relocation or loss of shelter; loss of assets or access to assets; or loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or (b) The involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

5.3 In the absence of a formal Resettlement Policy, the following legal instruments provide the legal framework for compensation and resettlement in Tanzania:

- The Constitution of the Federal Republic of Tanzania (1977)
- The Land Act (1999)
- The Land Regulations (2001)
- The Village Land Act (1999)
- The Local Government (District Authorities) Act
- The Local Government (Urban Authorities) Act
- Land Acquisition Act (1967),
- The Highway Ordinance Cap 167
- Town and Country Planning Ordinance cap 378
- Local By Laws; and

5.4 Land in Tanzania is vested in the President as trustee on behalf of all. The National Land Policy requires full and fair compensation to be paid to any person whose right of occupancy or recognized long standing occupation or customary use of land is revoked or otherwise interfered with to their detriment by the State under the Land Act of 1999. Section 34 of that Act also states that where a right of occupancy includes land which is occupied by persons under customary law, and those persons are to be moved or relocated, they must be compensated for loss of interest in the land and for other losses. They also have the right to reap crops that are sown before any notice for vacating that land is given.

5.5 The Land Act (Section 156) requires that with regard to communal right of way in respect of way-leave, compensation shall be paid to any person for use of land, who is in lawful or actual occupation of that land, for any damage caused to crops or buildings and for the land and materials taken or used for the works. Requirements for the assessment of compensation are provided in the Land (Assessment of the Value of Land for Compensation) Regulations of 2001. Valuation must be done by a qualified and authorized valuer.

6. Grievance Redress Mechanism

6.1 In the event that an affected person is not satisfied with the valuation of land and property, identification of affected property, ownership disagreement, disagreement of other compensation allowances, and problems related to time and manner of payment of compensation, etc.; such grievances will be addressed initially through mediation. The aggrieved person will first report his/her case to the Village and Ward Executive Committees. If these parties are unable to resolve the matter,

the complainant will be referred to an independent Grievance Sub-Committee set up by Social Services Committee which will resolve all grievances. This sub-committee will generally comprise members of the existing Social Services Committee, one representative each from the Ward and Village Administrations, one representative from the PAPs, and a leader from the local PAP community.

6.2 If further mediation is necessary, this may be conducted by the Regional Secretariat. However, if the attempt fails to resolve the grievance, then the parties may take legal action through the courts to determine the matter as stipulated under Section 156(4) of the Land Act No. 4 of 1999. Since legal procedures take a long time to settle, often PAPs tend to be disadvantaged during the long process and it is for that reason that the Social Services Committee should be vigilant so to resolve issues at an early stage. The aggrieved person will be exempt from any legal and administrative fees incurred during the grievance redress. Complainants will also be able to make recourse to the Independent Review Mechanism of the ADB.

7. Valuation of Assets and Losses

7.1 The Land Act of 1999 and the Land Regulations of 2001 provide the means for implementing the resettlement and compensation process. Valued assets include dwelling houses, crops, trees, hedges and fences. The project road also affects farmland, crops, permanent trees and other property. The RAP has utilized the Replacement Cost Method also known as the Contractors Test Method for valuation which makes reference to the cost of replacement at the date of valuation. In the case of a building, this means rebuilding a similar property to the same standard of workmanship, specifications, design and layout, inclusion of an allowance for professional fees (but usually excluding cost escalation during the rebuilding period).

7.2 Requirements for the assessment of compensation are provided in the Land (Assessment of the Value of Land for Compensation) Regulations of 2001. In this valuation the following has been adopted as the methodology to be applied:

- Buildings: The replacement cost (cost for rebuilding a similar property) is assessed, and no depreciation factor is considered except for allowances of incomplete structures, workmanship and other factors affecting property market value are considered as adjustments.
- Land: Values are assessed based on the average price of land at each specific area per sq m. Compensation for the loss of any interest in land includes the value of unexhausted improvement, disturbance allowance, transport allowance, accommodation allowance and loss of profits.
- Accommodation allowances have been based on market rent for 36 months.
- Disturbance allowances were assessed based on the principle of "the value of the estate multiplied by the rate of interest prevailing and payable to fixed deposits by commercial banks". Current rate is estimated at 4% per annum.
- Transport allowance is the actual cost of transporting 12 tons of luggage by road within 20 km from the point of displacement. Currently estimated at TSh. 120,000.
- Loss of profits has been calculated on the basis of net monthly profits of the business carried out on the land, for a period of 36 months.

After assessment of the property's replacement cost, land values, accommodation allowance, transport allowance and disturbances are assessed; these are added to arrive at a total compensation figure.

8. Compensation Characteristics and Legibility

8.1 According to the laws relating to land administration in Tanzania, the groups and persons entitled for compensation are essentially based on the right of ownership. The legal framework provides a guide for compensation to the people along the project road who shall lose properties and eligible for compensation. To conform to World Bank guidelines and those of ADB, individuals who may have occupied the land before a specified cut-off date or

may have come in as squatters and/or encroachers would qualify for some form of compensation such as assistance to obtain replacement land, compensation for other assets, cash compensation for infrastructure and assets lost. The type of compensation in this case may however not include payment for land within the demarcated RoW. Institutions and groups of people who may collectively own property and social infrastructure will also be eligible for compensation accordingly.

8.2 Criteria for the eligibility of displaced persons were established, and potential PAPs were confirmed by the local authorities. A methodology for valuing losses was developed based on guidelines provided by the Ministry of Lands and Human Settlement, so that the land and/or property to be acquired for the purposes of the road (including crops and trees) could be classified and valued. Replacement costs have been categorized separately from houses, structures, crops and trees. Sites for relocation have been identified. In most cases this involves “stepping back” within the same plot, rather than total relocation.

8.3 The institutional and technical arrangements for identifying and preparing relocation sites have been established. Packages for compensation for the affected persons have been developed, and an implementation schedule for compensation and relocation drawn up. All the necessary steps in the RAP Implementation Schedule will be completed within 12 months from the initial corridor definition to compensation payment and monitoring and evaluation. This will have to be completed before the contractor takes over site. All compensation activities and those related to other forms of assistance that may be necessary have been costed. A plan for monitoring and evaluation of the compensation package has also been drawn up, and performance indicators identified.

Table 1: Affected Property by Category and Road

Type of Structure/Asset affected			Total
	Iringa - Dodoma	Namtumbo-Tunduru	
Land and Buildings	840	404	1244
Mosque	1	16	16
Water sources	2		2
Total	843	420	1263

9. Monitoring and Evaluation

9.1 Monitoring and evaluation are important activities in terms of assessing the effectiveness of RAP implementation and have the following functions: to identify problem cases and ensure they are dealt with; contribute to the database forming part of the overall evaluation of the resettlement program; and ensure proper participation of PAPs in the RAP process. These will include physical progress of resettlement and rehabilitation activities, the disbursement of compensation funds, and the effectiveness of the public consultation process. In this project two types of monitoring are recommended: (i) performance monitoring through which the physical progress of the RAP can be measured; and, (ii) impact monitoring, which assesses the effectiveness of the RAP and its implementation with respect to meeting the needs of the PAPs. Performance monitoring will be carried out as an internal management function by the District Social Services Committees and TANROADS. In addition the PAPs will elect their representatives to participate in the monitoring of the implementation of the RAP.

9.2 The District Social Services Committees, with assistance from the Village and Ward Executive Officers, and any appointed local service providers (NGOs/CBOs), will monitor the rebuilding process and will be responsible for ensuring that the PAPs are using the compensation fund for rebuilding the affected structures or property. The Social Services Committees will be required to present monthly reports to TANROADS Regional Managers to report on the progress of the RAP. These reports will be forwarded to TANROADS Head Office for action as necessary.

9.3 For impact monitoring it is planned that an evaluation commissioned by TANROADS be conducted from an independent third party to determine the overall impact of the RAP. The key objective of the external evaluation will be to determine whether efforts to restore the living standards of the affected population have been properly executed. The evaluation will also verify the results of performance monitoring, and identify adjustments to the RAP packages, if required. The evaluation will assess, inter alia:

- The appropriateness of the relocation sites;
- The appropriateness of the implementation schedule;
- The appropriateness of the grievance mechanism;
- Mechanisms for assisting vulnerable groups.

9.4 The PAPs will be actively involved and informed in impact monitoring through participatory meetings. The cooperation of the Village Executive Officer and Ward Executive Officer is also crucial during these evaluations. It is envisaged that impact monitoring will first be carried out approximately 6 months after the PAPs have been relocated, and thereafter annually for a period of at least 2 years. At the end of each evaluation, a report will be submitted to TANROADS giving details of the evaluation and its findings and will form part of the progress report submitted to the Bank by TANROADS.

10. Costs and Budget

10.1 The table below gives an estimate of cost of compensation to be paid out for the two roads as a result of the project based on the land valuation survey carried out in the field and engineering surveys. The cost covers compensation for land, crops and property. It includes allowances for disturbance and transport costs as well as implementation and monitoring costs.

10.2 The estimates below are based on valuation surveys carried out for the 1244 properties that were identified in the two roads as being affected by the realignments and other geometric improvements. Compensation will not be paid for land within the right of way which was occupied while demarcation had already specified the road reserve but properties there-on will be compensated and so will land acquired for realignments. The overall total cost, therefore, for the two roads is estimated at TSh.1,355,868,373 (USD 1.043 million).

Table 2: Summary of Compensation Package (TShs.)

Compensation Item	TSh.		
	Dodoma - Iringa	Namtumbo – Tunduru	Total Project Roads
Land and Buildings and other assets (crops, trees)	946,312,469	391,763,600	1,338,076,069
Disturbance @ 4% of land and buildings	3,785,250	1,567,054	5,352,304
Transport Allowance	8,400,000	4,040,000	12,440,000
Total per Road	958,497,719	397,370,654	1,355,868,373