

The International Fund for Agricultural Development

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The Sudan

RURAL ACCESS PROJECT (RAP)

PROJECT DESIGN REPORT

Stage: Detailed Design

Main Report and Annexes

Near East and North Africa Division
Programme Management Department

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CURRENCY EQUIVALENTS

Currency Unit	=	Sudanese Pounds (SDG)
US\$ 1.00	=	2.5 Sudanese Pounds
SDG 0.4	=	US\$ 1

WEIGHTS AND MEASURES

1 kilogram (kg)	=	2.204 pounds (lb)
1 000 kg	=	1 metric tonne (t)
1 kilometre (km)	=	0.62 miles (mi)
1 metre (m)	=	1.09 yards (yd)
1 square metre (m2)	=	10.76 square feet (ft2)
1 acre (ac)	=	0.405 ha
1 hectare (ha)	=	2.47 acres
1 feddan (fed)	=	0.42 ha = 1.03 acre

FISCAL YEAR

1st January to 31st December

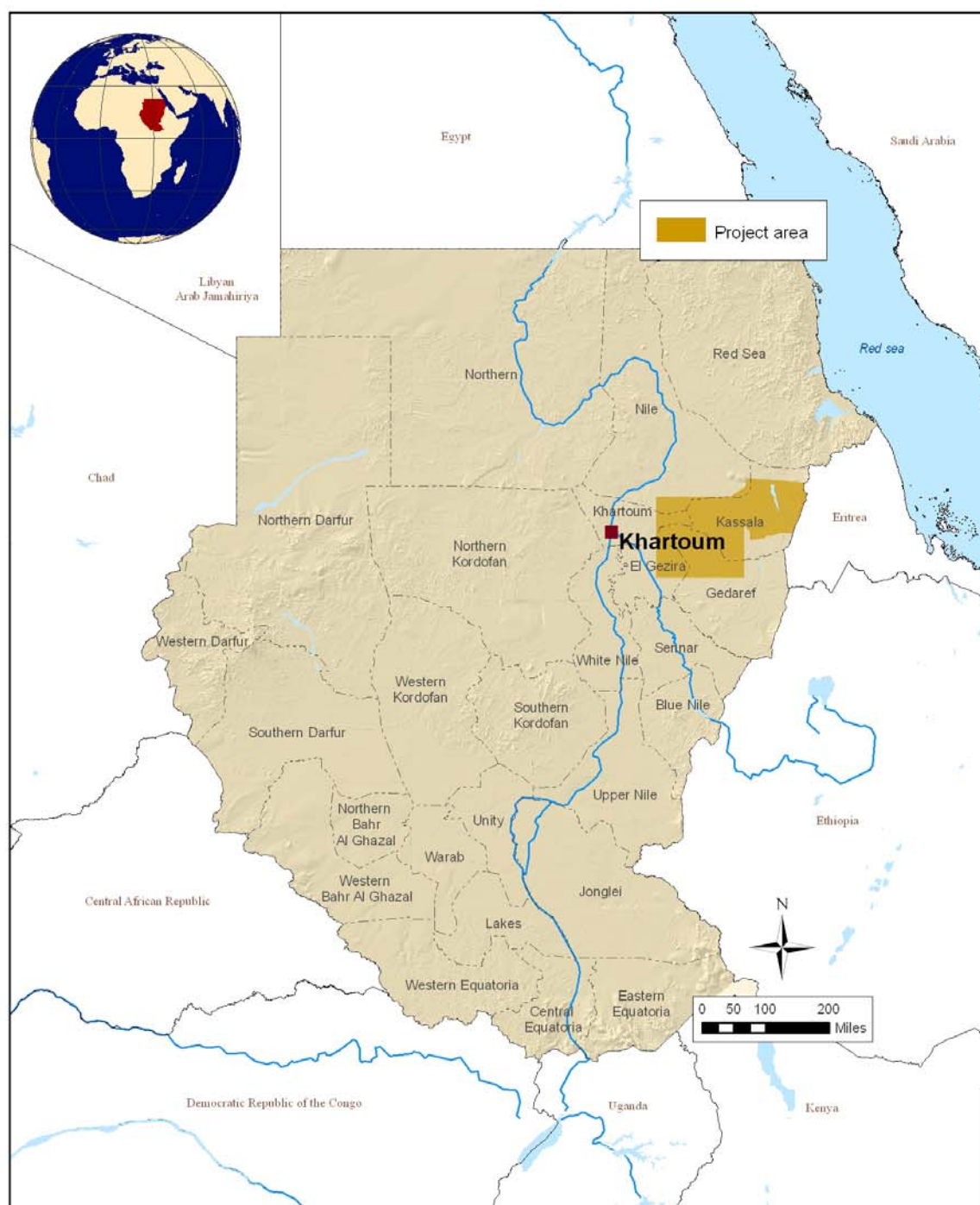
ABBREVIATIONS AND ACRONYMS

ARP	Agricultural Revival Programme
BDA	Butana Development Agency
BIRD	Butana Integrated Rural Development Project
CRF	Community Road Fund
DSF	Debt Sustainability Framework
CRF	Community Road Fund
GONU	Government of National Unity
MPPPU	Ministry of Planning and Public Utilities
NKRDP	North Kordofan Rural Development Project
NHBA	National Highways and Bridges Authority
O&M	Operation and Maintenance
RAP	Rural Access Project
RIMS	Result Impact Management System
RRMU	Rural Road Management Unit
RTT	Rural Road Travel and Transport

MAP: PROJECT AREA

The Republic of The Sudan

Rural Access Project

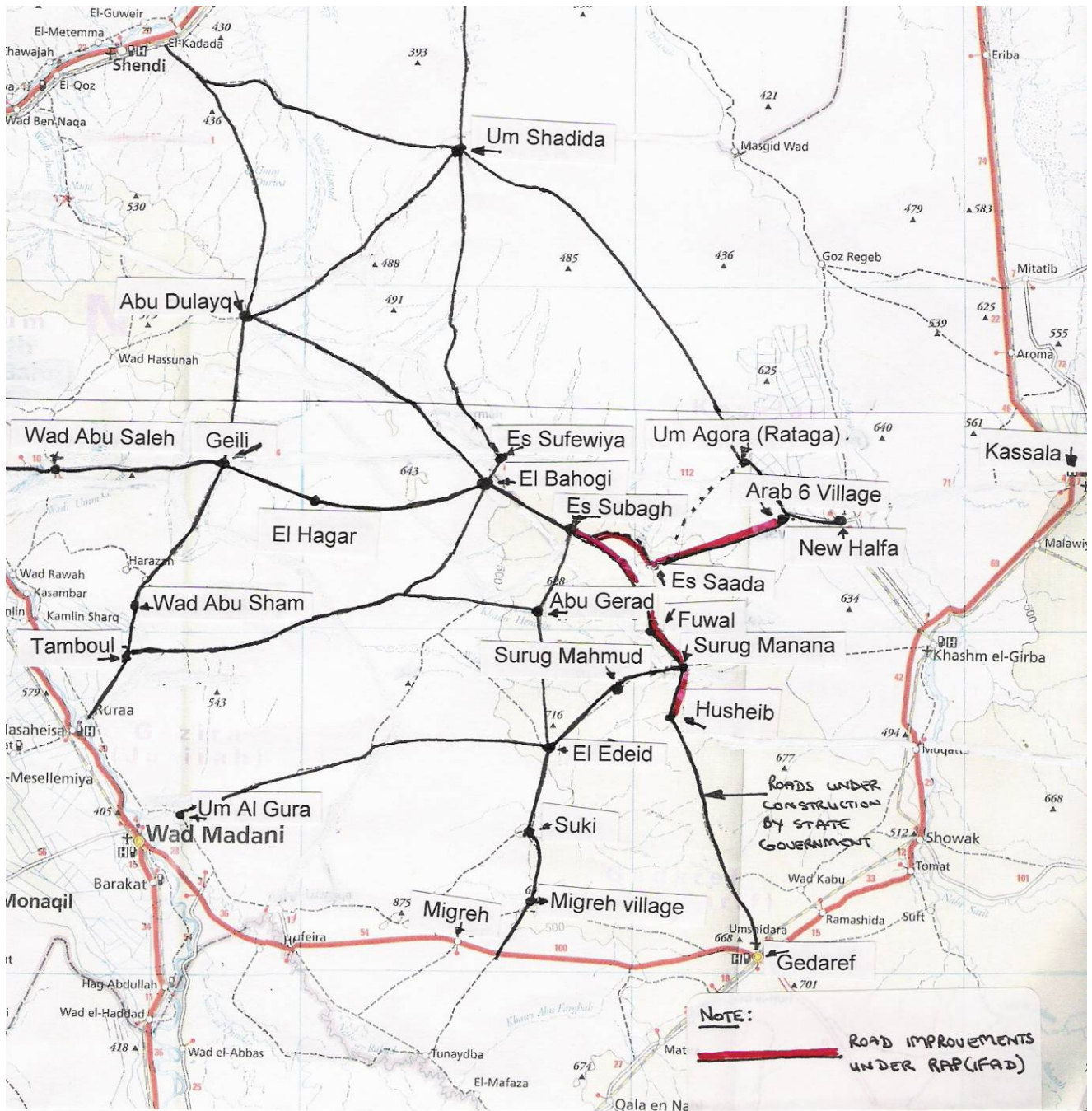


IFAD

The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers or boundaries, or the authorities thereof.

Map compiled by IFAD

FIGURE 1: EXISTING AND PROPOSED ROAD NETWORK IN BUTANA



Executive Summary

Project rationale. The Rural Access Project invests in rural roads in a way that complements the transport, production and marketing infrastructure supported in the IFAD co-financed Butana Integrated Rural Development Project (BIRDP, SD-717) and the Government supported Agricultural Revival Programme (ARP). Its results will be measured on the cost and time of transport, the change in the farm gate price, and the savings in vehicle operating costs. These results are expected to enable small producers to take better advantage of the production and marketing activities proposed under the BIRDP and the ARP.

The approach adopted for the construction of rural roads will consist of spot improvements in the form of the establishment of wadi crossings, spot repairs and treatment of gulley erosion. The access road selected is the Arab 6 – Es Soubagh - Husheib alignment, a 144 km long road servicing 5 main markets, and covering 2 localities in 2 states (figure 1). The selection criteria included (i) synergy with on-going projects particularly the ARP and the BIRDP; (ii) clarity of the flow of benefits to small producers; (iii) responsive to community priorities; (iv) close fit with available grant resources.

Project area. The project area covers two localities (Butana in Gadaref State, River Atbara in Kassala State) (see figure 1). The area is characterized by silty clay and black cotton soils where relatively poor drainage characteristics combined with flat topography results in prolonged periods of inundation during the rainy season especially in depressions and flat plain areas. Throughout the rainy season, general access to and from the main external markets is very difficult for vehicular access, livestock and people especially across seasonal streams.

Project beneficiaries. The total number of beneficiaries is expected to be 130 000 persons equivalent to about 15 000 producer households. It is also expected that there will be 1700 additional women trading in the main markets serviced by the road. Poor households constitute 80% of the rural population in Butana.

Targeting and gender mainstreaming strategy. The localities selected are among the poorer in the Butana. The gender mainstreaming strategy relies on women participation in the consultation for the prioritization of rural roads, and in the implementation of the conservation and water control works protecting the rural roads, and for road maintenance. The RAP project area covers 21 communities located along the road alignment in the localities of Butana and River Atbara. These 21 communities represent a subset of the 140 communities planned to participate in the BIRDP.

Project objectives. The project will contribute to the COSOP 2009-2012 goal of empowering the rural poor to increase their food security, incomes and resilience to shocks. The main project objective is to improve the access of the rural population to markets and social services. Three key results are expected from the project:

- Rural roads upgraded in Central Butana and regularly maintained. The project target is 144 km.
- Communities are trained to manage road tolls and to engage in labor based maintenance contracts.;
- State capacity is strengthened to plan, design, supervise, and maintain rural feeder roads using the spot improvement approach.

Project activities. The project will have 3 main components:

- **Physical rehabilitation and construction of rural roads** which consist in the improvement of the Arab 6 – Es Soubagh – Husheib road, implementing conservation works to protect the road from gulley erosion; and establishing the Community Road Fund which will act as the principal financing mechanism for the routine and periodic maintenance of the road.
- **Capacity building and institutional development** that would target the Road Departments of the State Ministries of Physical Planning and Public Utilities (MPPUs) with formal and on-site training as well as office support; in addition to training of communities on soil and water conservation works to protect the road from gulley erosion and on the management of the labour based contracts for road maintenance. Road committees will be established to organize and implement the conservation and maintenance works.

- **Project management.** The Butana Development Agency (BDA) will be the lead agency for this project and will be responsible for the coordination and financial management of project activities. It constitutes a good platform for the coordination and implementation of inter-state initiatives that promote sustainable development of the Butana area. The BDA will maintain a close collaboration with the NHBA for the monitoring of the performance and progress of the road works, the comparative advantages of the spot improvement and preventative maintenance approach and its potential replication to the rural road network.

Integration within the country programme. RAP contributes directly to the achievement of the country programme strategic objective of increased access of the rural poor women and men to markets and to microfinance. The RAP specifically contributes to the following milestone indicator of approx 200 km of roads constructed in project areas; and to the outcome indicator of at least 20% producers' access markets in the project area.

Project costs. The total project costs (including contingencies) are estimated at USD 14.96 million. The IFAD grant amounts to USD 12.95 million with a Government contribution of USD 1.92 million as duties and taxes and beneficiaries' contribution of USD 0.09 million towards the maintenance of the road.

Scaling-up potential. Scaling up is included as a result of the project. The project will develop the capacity of the road departments in the MPPPUs and will provide the cadre with the appropriate design manuals to train new staff and replicate the methodology of spot improvement to the rural road network in the 2 States of Gadaref and Kassala. Moreover, by involving the NHBA in the monitoring of the project, the potential for the replication of the spot improvement and preventative maintenance approach increases. The total set of road priorities identified is approx 1500 km in Butana. An amount of approx USD 12 million is required for the improvement of each 200 km road.

I. INTRODUCTION

1. The Government of National Unity and the International Fund for Agricultural Development have agreed on 3 strategic objectives as part of the Sudan country programme strategy for the period 2009-2012. The third objective "increased access of poor rural women and men to markets and microfinance" aims to align the IFAD co-financed country programme with the greater focus of the Government's Agriculture Revival Programme (ARP) on marketing. Given massive and widespread poverty in Sudan and the breadth of challenges facing the agriculture sector, the Government and IFAD agreed that the country programme will adopt an integrated rural development approach based on: (i) consolidating ongoing projects to strengthen their impact and sustainability; (ii) strengthening marketing and microfinance components in ongoing projects; (iii) systematically seeking complementarities and partnerships with ongoing operations in project areas; (iv) balancing investments in capacity-building and productive activities.

2. It is in this context that the Government of National Unity (GoNU) and IFAD agreed to include the Rural Access Project as part of the 2009 pipeline. The geographic focus of the intervention is on the Butana area in Eastern Sudan where the IFAD co-financed project, the Butana Integrated Rural Development Project, is on-going. The investment in rural feeder roads is complementary to the investments in road infrastructure, marketing, production and community investments in the BIRDP.

3. IFAD fielded a design completion mission¹ during the period 11th to 26th July 2009, to address the recommendations made by the reviewers in the Government and IFAD on the initial project design, and to develop the implementation modalities of the project with particular emphasis on management and procurement. The mission held meetings at federal level with the Ministry of Finance and National Economy, Ministry of Agriculture and Forestry, Ministry of Labour, National Highways and Bridges Authority; at state level with the State Ministries of Agriculture, Animal Resources, Physical Planning and Public Utilities, Finance, NGOs active in community mobilization and organization; at locality level with the local government and engineering units in Butana, River Atbara localities; at village and market level in Fuwal, Um Al Gora, Es Sadda.

4. The design completion mission built its conclusions and recommendations on the results of a socio-economic survey of the project area as well as the physical survey of the proposed alignment. These studies were undertaken by the Butana Development Agency² and the State Ministry of Physical Planning and Public Utilities (MPPPU) in Gadaref State respectively during the period June to July 2009.

II. STRATEGIC CONTEXT AND RATIONALE FOR IFAD INVOLVEMENT, COMMITMENT AND PARTNERSHIP (KSF 1)

A. Rural development context

5. **Performance of the agriculture sector.** Agriculture is the main source of livelihood for the Sudan's rural inhabitants, roughly 60 per cent and 90 per cent of the country's population in the north and south respectively. Agriculture provides 90 per cent of the national food requirements, constitutes 80 per cent of non-oil exports, and accounted for 42 per cent of GDP in 2007. Traditionally, prior to the oil wave, agriculture represented a far greater share: for instance, it accounted for 90 per cent of exports in the early 1990s but only 8 per cent in 2006. Exports include mainly livestock, sesame, cotton and gum arabic. The low productivity of agriculture combined with the recent appreciation of

¹ The mission was composed of Dr. Elsayed Zaki, Institutional Development Specialist and Mission Team Leader; Mr. Ian Anderson, Civil Engineer; Ms. Wadzanai Katsande, financial analyst; Dr. Asim Moghraby, environmental specialist; Ms. Rasha Omar, Country Programme Manager, IFAD; Mubarak M. ElDawi, Ministry of Finance and National Economy; Mr. Haytham Abdelbagui and Mr. Mohamed Abdelmotaleb, Ministry of Agriculture and Forestry. BDA Director and BIRDP Coordinator, Rashid Abdel Aziz provided much needed assistance during the course of the field work and participated in the state level discussions. The areas visited included Gadaref and Kassala States.

² The socio-economic survey was led by Dr. Abdelrahim Ibrahim, road economist, with participation from the following BDA staff: Mr. Rashid Abdelaziz, BDA Director; Ms. Aida Adam Osman, Gender and Community Development Officer; Mr. Mohamed El Hassan, Natural Resources Management Officer.

the Sudanese pound has further eroded the competitiveness of Sudanese agricultural products, namely for sesame, groundnuts and sorghum.

6. The country's agriculture growth rate is highly variable (from -2.5 to 7 per cent within the period 2001-2007). A distinction is usually made between the irrigated and the rainfed agriculture subsectors. Growth in both subsectors is erratic. In the irrigated sector, this is the result of the deferred rehabilitation and modernization of irrigation systems and their management leading to low efficiency in water conveyance and low productivity. In the rainfed sector, disappointing growth can be traced to the vulnerability of agricultural production to climatic variability, declining and erratic yields, and the restrictions imposed by importing countries on Sudanese livestock due to intermittent disease outbreaks. The traditional rainfed sector accounted for 26 per cent of the GDP in 2005, and for 67 per cent of agriculture GDP. It is the most important sector for the agricultural economy and the livelihoods of poor rural people, and yet it only receives from 3 to 12 per cent of expenditures on the agriculture sector. The rainfed sector also receives a very limited share of private investments in agriculture: this is mainly attributed to unclear land tenure arrangements and very poor infrastructure.

7. In The Sudan, the weak performance of the agriculture sector is perpetuated by five main factors: (i) decades of civil conflict and underdevelopment that have ravaged traditional rainfed agriculture; (ii) disabling agriculture policies, including delayed financing of agricultural investments, insufficient financing of the running costs of agricultural services, and overtaxation of agriculture commodities, particularly the exportable commodities produced mainly by the rainfed sector; (iii) inadequate land policy; (iv) inadequate water policy; (v) inefficient marketing arrangements. Market inefficiencies are a result of poor accessibility (the road accessibility in Sudan is among the poorest in Africa), high internal costs of transport due to limited road infrastructure, high costs of handling products moving to points of export, imposition of charges and taxes in the marketing chain and the weak organization and bargaining power of small-scale producers.

8. **Rural roads, an under-developed sector.** For a vast country like Sudan, the existing transport infrastructure and facilities are poor and are considered the single most important constraint to the development of agricultural markets and to small producers' access to these markets in rainfed areas. The spatial road density of one kilometre of paved road per 575 km² of land area is one of the lowest in Africa and, with 126 km of paved roads per million population, road accessibility is less than in other countries in Africa as well as prevailing regional averages (Vijay 2007). It also seems that there has been an imbalance in transport development between railway and roads, where the latter has largely dominated; covering over 90% of inland transport services.

9. The road network, which is originally weak, has also deteriorated as a result of war and limited budgetary allocation for maintenance and capital repairs. Most important is the lack of feeder roads that would be conducive to the development of the agricultural sector. Rural/village access or feeder (tertiary) roads form 20-30% of the total road network compared to 40-50% for state roads and 20-30% for national roads (Vijay 2007). The poor infrastructure situation is largely engendering high transport and transaction costs in the movement of agricultural products. Road tariffs on tertiary roads are 50% higher than those applied on the main national road network thus leading to high transportation costs per km. Marketing costs, excluding charges not levied against any type of services, varied from 32% to 49% of export price for rain-fed sorghum, sesame and groundnuts according to the conditions of 2006 (van Holst Pellekaan and Faki, forthcoming). Such rates and associated transaction costs reflect negatively on producers in the traditional rain-fed sector.

B. Policy, governance and institutional issues, political and economic issues

10. The section will focus on the most salient policy, institutional, political and economic issues that are of direct relevance to the rural transport sector in Sudan. Further detailed description is available in working paper 1.

11. **Policy.** The Agriculture Revival Programme articulates the Government's vision for agriculture development as the engine of growth and the key catalyst for rural poverty alleviation. In this programme, rainfed agriculture is allocated 25%³ of the total Programme budget. Rural infrastructure (inclusive of roads) is allocated 7.5% of ARP budget, and 80% of proposed road lengths are located in states where rainfed agriculture is the predominant production system. Such investments are aligned with the vision to remove barriers to mobility and marketing in the rainfed areas. As a reminder, rainfed agriculture accounts for a large share of agriculture GDP and exports.

³ This is a conservative estimate based on aggregate data available in the ARP publication, 2008.

12. With regards the road sector, policies exist for national roads only in terms of their construction, management and maintenance. The road transport system in Sudan is classified into five main types of road (table 8 in working paper 1). Responsibility for the national road network lies with the National Highways and Bridges Authority (NHBA) under the Ministry of Roads and Bridges. The maintenance and rehabilitation of national roads is also the responsibility of NHBA and is financed from road tolls collected by a private company and deposited in the NHBA account.

13. Roads and structures that are not of national classification are delegated to the States who plan and run their own programmes. States can request the assistance of NHBA in design and supervision given its higher technical competency. Planning of roads at State level follows an ad hoc prioritisation process rather than developing strategic plans covering all sectors with clearly established and quantified alignments, designs and estimated costs. Limited funding and uncertainty of flow of funds acts as a disincentive to planning. This is a structural problem in Sudan, all the more so considering the existing budgetary crisis due to decreasing oil prices. Maintenance is not undertaken for state level roads. Indeed, no road maintenance section or department exists at State or locality level and although annual maintenance of roads is carried out for roads within the cities, this is well below what is required under a preventative maintenance programme. In the rural areas no such programme exists with states concentrating more on capital repair of the most damaged roads as funds become available.

14. In conclusion, it would appear that there is no specific policy framework governing rural feeder roads in terms of planning, supervision and maintenance. Three issues appear of critical importance: (i) planning of the rural road network to take into account marketing and social opportunities; (ii) preventative maintenance; and (iii) predictability of financing for capital and maintenance costs.

15. **Institutions.** Eight institutions of relevance will be discussed here: the National Highways and Bridges Authority, the Ministry of Labour, the State Ministry of Physical Planning and Public Utilities, the engineering units in the localities, the Rural Infrastructure Working Group of the Secretariat of the Agriculture Revival Programme, the Butana Development Agency, the contractors, civil society organizations.

16. **The National Highways and Bridges Authority (NHBA)** is governed by a Presidential Act for 1997. The NHBA has the following purposes: (i) provide and develop best services according to Minimum Cost Principle and to realize surplus for the General Treasury; (ii) participation to increase the national income and improvement on performance of services which the NHBA is supposed to provide; (iii) provide investment which the private sector has no ability to obtain individually. It cumulates the responsibilities of studies, design, construction using its own equipment, supervision of works, management and maintenance of national roads. It also provides assistance with design and supervision of works to states upon demand. In addition to its headquarters, it has 7 offices that cover the geographic areas of Sudan: 2 such offices cover the Eastern region and are staffed with a resident engineer⁴. The NHBA raised a total revenue (principally from tolls) of SDG 144 million and realized a surplus of approx SDG 12.3 million. The technical capacity of the NHBA is deemed satisfactory. The NHBA now carries the supervision for rural roads planned under the Agriculture Revival Programme.

17. **The Federal Ministry of Labour.** The Ministry has implemented in the past labour intensive road construction with assistance from the International Labour Organization in the White Nile state. This experience taught the Ministry that for such works to succeed, a number of requirements should be met: materials for construction should be available locally; the road construction should also be linked to other activities such as afforestation, water reservoirs, soil and water conservation works; sufficient number of engineers to supervise and backstop the works; and high level of organization of the logistics of the work. The Ministry has an on-going project for labour intensive works in Kassala State, targeting the control of the seasonal Gash river.

18. **The State Ministry of Planning and Public Utilities (MPPPU).** A Roads Department located in the Ministry of Physical Planning and Public Utilities is responsible for all aspects from planning through to maintenance. In practice as funds are very limited and design capacity is constrained, the work involves engaging the NHBA to carry out feasibility and design studies. Few experienced staff are available with the numbers being made up of engineers and surveyors and architects who have mostly graduated within the last four years. Although the staff appear to have good academic

⁴ The NHBA has an office in Khashm El Girba in the vicinity of the project area. The office also has lab facilities for material testing.

background, the guidance that they receive in their professional working life is very limited. Good technical staff have been taken up by contractors and consultants leaving very few experienced staff to plan, design, supervise, and maintain roads within the states' jurisdiction. As a result, the capacity to oversee the private sector is limited and has resulted in inadequate quality control, poorly sited structures and questionable sustainability. For roads of national importance, MPPPU staff are seconded to work with the NHBA on the supervision of construction works.

19. ***The engineering units in the localities of Butana and River Atbara.*** The localities have no mandate with regards the design/supervision and maintenance of rural roads. They participate in the overall planning for road construction at state level and lobby the state and federal government for road networks within the boundary of the locality. Each locality has an engineering unit that is responsible for the design, supervision and repair of construction works, primarily buildings for schools and health centers. The existing cadre is limited in number, composed of young graduates with no practical exposure to road engineering. The existing cadre is either outposted to the locality from the MPPPU or recruited against a locality level post. The capital investments for construction works of schools and health centers at locality level are funded from the state and federal development budgets.

20. ***The rural infrastructure working group in the secretariat of the ARP.*** The working group is chaired by the Federal Minister of Irrigation and Water Resources and includes the National Highways and Bridges Authority. The scope of work of the working group is to provide overall guidance on the disbursement of ARP funds on these activities. The working group agrees that the ARP has no strategic plan for the rural roads investments. In response to the serious capacity deficits in road construction at state level, the Secretariat has requested the NHBA to carry out the supervision of roads constructed under the ARP. Discussions are under way to explore how the present project could be used as a catalyst for the improved planning, monitoring and sustainability of the ARP investments.

21. ***Butana Development Agency.*** Established in 2007 by Presidential decree, the Butana Development Agency is a federal entity that coordinates inter-state efforts for the sustainable development of the Butana area. The Butana area represents an agro-ecological unit that corresponds to the rainy season grazing ground, and it covers 9 localities in 5 states (see table 1 in working paper 1). The BDA has the mandate to (i) mobilize funds from the federal and states' governments for project activities in addition to donor funds; (ii) facilitate the execution of the projects' interventions through the provision of the necessary investments, capacity building and resource deployment; (iii) strengthen stakeholders' organization for the regulated access and use of natural resources and for the improved efficiency in livestock marketing; (iv) facilitate the process for the identification, negotiation, approval and monitoring of pertinent policy decisions involving the respective states with regards land and water governance in accordance with poverty reduction objectives; (v) ensure the replication and expansion of successful project interventions through the mobilization of additional resources whether from the federal or state governments, national and international NGOs, or donors; (vi) monitoring and evaluation of project activities, results and impact. The BDA is currently managing the IFAD co-financed BIRDP (loan no. SD-717) which has a livestock and marketing development component. The BDA is proposed as the lead agency for this project and is also set to cooperate in a forthcoming GEF financed project on carbon sequestration with the Forests National Corporation. The BDA does not currently have among its staff a road or civil engineer.

22. ***Contractors.*** There is a wide range of contractors capable of undertaking all civil work activities in Sudan. Many are prepared to undertake rural construction works such as feeder roads and spot improvements. Contractors are qualified by the NHBA. Contractors draw on qualified national staff from the private sector as many Sudanese working abroad have returned.

23. The major constraints facing road contractors is the difficulty in receiving timely payments from Government (both Federal and State). Many contractors therefore undertake assignments through the delay backed through bank guarantees, government bonds and bill of sales. Some contractors will enter into contracts without guarantees and wait for payment which is sometimes settled in land or in kind. This phenomenon has several adverse effects: increasing the cost of road construction to include the cost of financing; low adherence of contractors to specifications; failure of some contractors due to financial problems.

24. ***Civil society organizations.*** The Butana area has a number of grassroots organizations formed and trained by the UNDP-funded Area Development Scheme that closed in 2000. These

organizations are also registered under the voluntary association law. A total of 31 village based grassroots organizations were then federated into an apex association for the development of Butana, registered under the state level voluntary association law. The apex association has two main activities: rental of agricultural implements; and supporting access to utilities mainly potable water and electricity (through generators). The association has institutional weaknesses illustrated by the irregularity of the audit of accounts, retaining the board of directors beyond its term, and infrequent general assembly meetings. The main lessons derived from the experience of the civil society organizations with fund management is as follows: centralization of funds eases its management and control; dedicated staff should be assigned to manage the funds; to the extent possible, the association should contract out services or works rather than deliver these itself given limited staff and business skills.

25. In conclusion, it is clear that significant capacity building will be needed at state and community level on the planning, design, supervision and maintenance of rural feeder roads. Moreover, policies and mechanisms need to be put in place to ensure preventative road maintenance.

26. **Economy.** As reported in the Rural Road, Travel and Transport Review (IFAD, 2007), there is enough empirical evidence to demonstrate the strong link between the poor state of rural infrastructure and rural poverty. Facilitating access to service and market centers by removing physical access barriers, decreasing the costs and time of transport, results in positive impacts on commodity sales, diversification of entrepreneurial activities, education and health. The present economic assessment of the project benefits has taken these impacts into consideration. The technical specifications for the rural roads need to be consistent with their potential uses, expected traffic volume, financing capacity of Government and users. The internal rate of return was calculated for the proposed rural road of Husheib-Es Soubagh- - Arab 6 taking into consideration 3 different specifications: (i) spot improvements; (ii) gravelled road; (iii) asphalted road. The analysis shows that given the traffic volume and market activity in the Butana, a spot improvement approach is warranted and would allow maximum road coverage at reasonable km cost of improved accessibility.

Table 1: Comparison of rates of return based on the road surfacing

Description	Project Base Cost (USD)	IRR
Spot Repairs	13 347 790	22.3%
Gravel Road	24 579 897	12.1%
Asphalt Road	38787404	6.1%

27. **Political buy-in.** The Government of National Unity is committed to the development of the agriculture sector and a number of initiatives reflect this commitment:

- The 25 year (2007-2031) Strategic Plan
- The Green Initiative (Nafra) for Rural Development, adopted for two seasons and then incorporated into a sequel, the Agricultural Revival Programme.
- The Agriculture Revival Programme (2008-2011), a five year plan for agricultural modernization and transformation
- The budget allocated to agriculture increased from 25% to 44% of the national development budget during the period 2000 to 2006.

28. Rural roads are among the ARP popular endeavours. In the states of Kassala and Gadaref, the roads constructed under the ARP are currently linking main towns with the irrigated and the mechanized sectors. The RAP will extend planned roads under the ARP to the rainfed areas where the livestock resources are concentrated in the rainy season. This is expected to facilitate livestock trade in the rainy season and easier access to higher value markets, for example Gadaref, for livestock export. The two states have committed to completing the alignment under ARP in synchronization with the road proposed under the RAP.

C. The IFAD country programme

29. The outreach of the country programme to date is about 1.6 million persons. The results available from the completed North Kordofan Rural Development Project (NKRDP) and the two ongoing projects that have passed their mid-term – the South Kordofan Rural Development Programme and the Gash Sustainable Livelihoods Regeneration Project – indicate that the country programme has contributed to increased asset ownership, improved food security and higher farm and off-farm incomes. Rural roads represent approximately 24% of project total costs under the 2002-2008 country programme, the bulk of these investments being co-financed. However given the positive impacts achieved on agriculture productivity and local economic development, as evidenced by the Bara-El Obeid Road under the NKRDP, IFAD financing is also being increasingly allocated to this activity. To illustrate this, the assessment of the Bara - El Obeid road, a 56 km tarmac road, revealed the following: travel time decreased by 70%, fuel consumption of vehicles decreased by 50%, the sale price producers perceive has increased by up to 150%; and the cropped area has increased by 200% and labour opportunities by 60% (NKRDP Project Completion Report, 2009). Under the COSOP 2009-2012, rural roads are eligible for IFAD financing as a means to achieve the strategic objective of increased access of poor rural women and men to markets and microfinance, especially when these roads are complementary to integrated rural development projects that facilitate producers' access to improved production technology and to markets.

30. The country programme evaluation rated the overall performance of the IFAD portfolio in support of the Government of The Sudan as moderately satisfactory. The evaluation notes that the country programme needs to improve in terms of efficiency, sustainability and scaling up of policy dialogue from the project to the national level.

31. The **BIRDP** was declared effective in July 2008. The specific objectives of the project are: (i) establishing a coherent and cost effective governance framework that ensures a regulated access to land and water resources of the Butana; (ii) improving the access and bargaining position of women and men in the marketing of livestock; (iii) developing the capacity of community-based organizations to engage in environmentally sound, socially and gender equitable development initiatives. The project supports both production and marketing services. It has a budget of USD 4.8 million allocated to livestock and marketing development to finance: (i) the construction and rehabilitation of 10 water course crossings to increase accessibility to markets and social services during the rainy season for a total budget of USD 2.7 million; (ii) the construction of a market in El Edaid El Humur village and the rehabilitation of 5 markets Tamboul, Rattaja, Um El Gura, Es Soubagh and Seidon, for a total budget of 0.4 million USD; (iii) the organization and training of producers to market livestock and dairy products and access veterinary services for a total budget of USD 1.7 million. The budget available under BIRDP for the construction of crossings however is deemed insufficient to significantly raise producer's access to markets. Given the isolation of the central Butana area during the rainy season, it was deemed necessary to complement the crossings' construction with the construction of a rural feeder road linking the Central Butana area to the main rainy season livestock markets.

32. The activities of road construction under the Rural Access Project and the activities of market development under the BIRDP will need to be synchronized to create synergy. In particular, the market development and market information system should be launched so as to maximise producers' access to higher value markets and should be completed within the period 2010-2011.

III. POVERTY, SOCIAL CAPITAL AND TARGETING (KSF 2)

A. Rural Poverty, Information and Analysis

33. The information here is based on the appraisal report of the BIRDP (the baseline survey of the BIRDP is not yet completed); and on the socio-economic survey completed in July 2009 in the RAP project area.

34. **The population.** The Butana corresponds to a socio-ecological unit under 5 states and 9 locality divisions and it covers an area of 65 000 km². It is inhabited by 3 groups: (i) a group that resides all year round in the central Butana but practices seasonal labour migration as a coping strategy whereby men migrate to the periphery of Butana in the dry season in search of work in the irrigated and mechanized schemes or migrate to Khartoum where they work in the building industry,

brick making, petty trade etc...; (ii) a group who settled in the periphery of the Butana - particularly on the outskirts of the New Halfa irrigation scheme - in the wake of the 1980s drought and who returns to Butana in the dry season to cultivate own land in wadis or on terraces; (iii) the nomadic group who moves to Butana from nearby states in the rainy season to make use of the open access pastures.

35. Reliable statistics on the demographics of the Butana are difficult to obtain in view of the administrative fragmentation and the mobility of the population. Discussions with local administration and the local population put the estimate of the total population at one million inhabitants. The population density is approximately 15 inhabitant/ km² and follows a downward gradient as one moves towards the center of Butana (around Es Soubagh).

36. The predominant ethnic group in the RAP project area is the Shukriya tribe which constitutes more than 80% of the population. Other ethnic groups include Khawalda, Bataheen, Jaleyin, Lahaween, Kawahla, and Maashra, in addition to small ethnic groups like Fadnia in the northern part. The nomadic tribes that visit the area in the rainy season include the Umbororo who are purely nomadic cattle raisers from the Blue Nile State, as well as the Beja and Rashayda fom Kassala State.

Table 2: Estimated Distribution of the Population in Butana

Total population of Butana area	1 million inhabitants
Rural population in Butana	80% of total i.e. 800 000 inahb.
Central Butana	30% of the population, i.e. 240 000 inhab. mostly resident settlements. 80% of this population is poor: 190 000 inhab.
Periphery of Butana (the irrigation areas, the semi-mechanized farming and the eastern parts of the Khartoum and Gezira states)	70% of the population, i.e. 560 000 inhab. mostly settled communities with more limited reliance on communal or open access resources. 67% of this population is poor: 375 000 inhab.
Transhumant population	Settles in central Butana during the rainy season. Estimates of 240 000 inhab.
RAP project area along the alignment of the road (located in Central Butana)	- 63 000 inhabitants in the dry season in 21 communities along the proposed road alignment Husheib-Es Soubagh - Es Sadda - Arab 6 - 130 000 inhabitants in the rainy season (incl. the nomadic population) along the road alignment. - Livestock wealth estimated at 500 000 heads of camel, 400 000 heads of cattle, 700 000 heads of sheep, 140 000 heads of goat, along the road alignment in the rainy season.

37. **Subsistence oriented livelihoods.** Butana represents a socio-ecological unit under 5 states and 9 locality divisions, and is characterized by the low density of the population and its seasonal migration. On the poverty scale established by the national Multiple Index Cluster Survey carried out by UNICEF, poverty levels are average for the states where Butana falls. The available statistics for the project area show that almost 12% of children under-five are moderately wasted and 12% are severely wasted. The indicators of infant mortality rate and under five mortality rate were also taken as a proxy for poverty: in the Butana, they vary between 40 to 100‰, and 60 to 140‰ respectively. These indicators are the lower in the states of Gadaref and Kassala which cover the central and southern parts of the Butana area, where the RAP investments will be located.

38. The main source of income/livelihood is subsistence oriented and is based on traditional agriculture and pastoralism. Traditional agriculture depends essentially on harvesting of rain water through terrace and wadi cultivation. Terrace cultivation involves the establishment of ridges to reduce rain water run-off and increase soil moisture content. Wadi cultivation is practised on the residual moisture following the recession of wadi or seasonal river floods. Sorghum is almost the sole crop grown. Pastoralism entails migration to Butana during the rainy season (August-October) and out of the Butana thereafter (October-July) to areas where crop residues and water are available. This means that herds move to New Halfa and Gezira Schemes, as well as the large-scale mechanized schemes in the states of Gadaref, Blue Nile and River Atbara and further south towards Upper Nile State. The main animal species are sheep, camels, cattle and goats. Goats are sold all year round to meet consumption needs, whereas sales of camels/ cattle and sheep are seasonal.

39. **Access to markets.** About 78% of communities in Butana sell their produce and buy their household needs at town markets. Only 13% of the communities depend on nearby village markets and 9% on community markets. The vast majority of Butana communities depend on lorries as their first means of transport to access markets and neighbouring villages. Women use pick-up trucks to move between their village and the town market, namely New Halfa, a major destination for trade, health services and social gatherings. Animals and walking are used mainly to access nearby communities in festivals and condolences. The quality and service of transport has improved thanks to the construction of the asphalt road connecting New Halfa to the main road between Khartoum, Gadaref, Kassala and Port Sudan. In this regard and given the widespread and socially acceptable use of vehicles (lorries and pick-ups) for men and women transport, the development of intermediate means of transport will not be required.

40. Producers chose the suitable marketing channels depending on the cost of transportation to the market, itself a function of distance and, the number of animals to be sold. Transportation costs during the rainy season (Kharif) increase by almost 50% due to the poor state of the roads to and between markets which render travelling very difficult. The tables below provide a comparative view of the herds and livestock sales in the main markets used by the population in the project area.

Table 3: Livestock in the project area, based on estimated figures for 2008 (source: socio-economic survey, BDA, 2009)

Livestock in the RAP project area	Number of heads in dry season	Number of heads in wet season for settlers and nomads	Difference
Camels	180900	556500	308%
Cattle	40300	394950	980%
Sheep	126000	775000	615%
Goats	37900	144200	380%

Table 4: Livestock sales in the markets that serve the project area based on estimated figures for 2008 (source: socio-economic survey, BDA, 2009)

MARKET	DRY SEASON				WET SEASON			
	Camels	Cattle	Sheep	Goats	Camels	Cattle	Sheep	Goats
Rattaja	2000	21840	39090	13030	0	7207	23454	7818
New Halfa	600	35000	75000	30000	0	0	0	0
Es Soubagh	1270	600	5000	3400	2690	700	17500	2300
Al Edeid	540	360	9000	900	720	600	6000	300
Gadaref	2800	1600	6000	1200	0	0	0	0
Tamboul	8000	10000	40000	2500	3000	1500	20000	1100
Total	15210	69400	174090	51030	6410	10007	66954	11518

Table 5: Livestock prices in the various markets, based on estimated figures for 2008 (source: socio-economic survey, BDA, 2009)

Markets	Average Price /Head in SDG				Average Price /Head in SDG			
	Dry season				Wet season			
	Camels	Cattle	Sheep	Goats	Camels	Cattle	Sheep	Goats
Es Soubagh	1050	1350	180	140	1400	1800	190	150
Rattaja	1100	1200	230	160	-	1200	160	110
Halfa	900	1200	200	70	-	-	-	-
Gedaref	1800	1100	280	180	1600	1000	230	120
Tamboul	1200	1600	220	180	900	2500	210	180

41. It is worth noting that the dry season is 40 weeks long whereas the rainy season is 12 weeks long. In the rainy season, the communities living in the project area find it difficult to transport their herd to the terminal markets of Gadaref and Tamboul due to the impassability of the road and the increase of the transportation costs by 100% to SDG 10-20/ person. The roads are blocked either by muddy conditions or the floods from the seasonal streams. Rain shower of moderate intensity could prevent passing over a road for 3 days or more. Such situation leads to complete cessation of livestock supply to the market as in the case of the New Halfa Market as shown in the table 5 above where no prices were given for the wet season. The Es Soubagh market is very active in the wet season. Es-Soubagh market is considered a high potential market place as brokers visit it from big markets like Tamboul, Gedaref and Khartoum. This is explained by the large numbers of animals present in the area (see table 3). The Es Soubagh market is dominated by big merchants and brokers who command lower prices than the terminal markets in Tamboul and Gadaref. It is estimated that with good road access, producers in the project area would sell in the terminal markets and increase their gross margin from SDG 16 to 45/ sheep.

42. **Poverty in Butana.** The perception of poverty by communities in Butana is variable. Communities that were found to be both poor and have a low capacity of natural resources management have the following characteristics: reliance on agro-pastoralist and pastoralist modes of production (i.e. no access to irrigated scheme or mechanized farms); lack of permanent water source; absence of social services; communities situated in the areas of average to severe deterioration of the vegetation; distance from dry season markets. These communities represent 30% of the project area communities, and are mostly located in the Central part of the Butana region which corresponds to the RAP project area. Poverty incidence in these communities is estimated to be 80%.

B. The target group, including gender issues

43. In **Butana**, target households will include:

- The poor households with less than 10 heads of small ruminants, cultivating only rainfed land (either in wadis or on 'terraces') and lacking the means to finance tractor ploughing and therefore cultivating no more than 5 feddans of sorghum per family, even if they have a right to more. Women in these households are involved in milking small ruminants when they have any, and do not have any surplus milk for processing. They make mats and other basket work for sale. They also participate in cultivation tasks, planting seeds, weeding and harvesting when the family fields are within walking distance. Men and women from such households located near the irrigated schemes also work as casual seasonal labourers on the schemes as a coping strategy to address poverty; men also gather and sell firewood as well as seek unskilled employment in more remote towns and cities throughout Sudan. This group is composed primarily of households who do not leave the Butana area.
- Average households can be roughly described as those with about 30 small ruminants, up to 10 cattle and/or camels, cultivating up to 50 feddans of rainfed sorghum with mechanised assistance for initial ploughing. They may also supplement this income through seasonal labour of one or two family members on neighbouring irrigated schemes, in cities or even as migrant workers in Saudi Arabia. Women in this group are usually involved in milking small ruminants and processing their milk (as well as cow milk) into ghee and yogourt. In most of the project area, women do not milk cattle or camels for cultural reasons. They do not participate in cultivation, except if the fields are very near their homes in which case they may participate in weeding and harvesting. These households are basically settled within the Butana area, but most send their livestock towards the better pasture areas during the wet season, accompanied by some of the male family members.
- Wealthy households obviously have a larger area to cultivate, and own herds within the range of 100 to 300 heads, have easier access to mechanization, engage in trade activities whether for livestock or water, and are either settled within Butana or transhume from outside of the project area. Mobility within and outside of the Butana is important for them to feed and water their herds.

44. In conclusion, the target group of the RAP in central part of Butana⁵ is composed of poor and less poor households. For the poor households, the project will target them with labour intensive activities in the context of the soil and water conservation works to protect the road from gully erosion. Households participating in such works will be trained on conservation techniques and on selecting the best vegetative cover from an environmental and economic point of view: for example agro-forestry can support the conservation works and at the same time provide short term food security and cash benefits to the households. For the less poor households, and who own vehicles, the project will target them with awareness campaigns to encourage them to pay road and market fees which proceeds will be used for the preventative maintenance of the road.

C. Targeting strategy and gender mainstreaming

45. With regards poverty targeting, the project area corresponds to the poorer areas of central Butana. The targeting strategy implies that for a blanket investment like a rural road, the project management should ensure that the poorer groups derive a larger benefit than other groups. In order to achieve this, the project will adopt the following targeting strategy: (i) promoting labour intensive soil and water conservation and road maintenance works in the dry season to generate income for poor households. These activities would target the poor households who reside in Butana in the dry season; (ii) monitoring the profile of the women and men employed on soil and water conservation as well as road maintenance works in order to ensure that the training on soil and water conservation works and on maintenance works as well as labour opportunities are equitably distributed along age and gender. This will be reflected in the M&E system of the project described in annex 6. The implementation of this target strategy is built on the following: (i) wealth ranking undertaken with communities; (ii) identification of households who are most in need of dry season jobs and the skills of and physical ability of women and men in these households; (iii) the road committees formed at village will prioritize these households for training on soil and water conservation works, and for participation in labour intensive maintenance works.

46. With regards gender mainstreaming, and given women overall limited mobility in the Eastern communities, the main issues to consider are : (i) the improved roads should address both concerns of access to markets and service centers (particularly health and education) and hence women should be represented in the planning and prioritization of the selected roads; (ii) the routine maintenance of the roads particularly the soil and water conservation works to protect against erosion would offer women labour opportunities during the dry season and increased production from crops and forestry; and (iii) for the more entrepreneurial women, the road will offer the opportunity to engage in income generating activities (petty trading, dairy processing, deferred sale of crops, etc...). The RAP design will address points (i) and (ii) while point (iii), is already addressed as part of the BIRDP on-going activities. It is worth mentioning that the alignment Es Soubagh - Arab 6 responds to women's priorities in terms of mobility as it facilitates their access to New Halfa, which for women is the main town for purchase of consumers' goods and raw material for their handicraft industries, for access to health services and for family gatherings. Outreach to women is currently facilitated by the locality development teams which include among their members at least two professional women, the community development officer, range extension agent and/or the animal production extension agents.

D. Geographic coverage of the project

47. The project covers two states in Eastern Sudan, Gadaref and Kassala and 2 localities i.e. Butana in Gadaref State, and River Atbara in Kassala State. The main characteristics of the project area are described in working paper 1 para 8 to 11, and the main features summarized here.

- There is a wide variation of soil types and properties in Butana. Texturally, the soils are sands, sandy/clay loam and clay loam to clay with the lighter sandy soils predominating in the north. Soils with high clay concentration and fine texture are found in the southern parts of the plains. Gravelly weathered and sand surface sheets are found scattered in various locations throughout with concentration in the vicinity of the mountains and outcrop rocks.
- There are no clearly defined access routes and roads, and vehicles that utilise the area

⁵ The central part of Butana covers two localities, Butana and River Atbara.

especially during the dry season, take any alignment that they choose. This has meant that wide areas have formed tracks and destroyed any form of vegetation that may still try to grow using residual moisture. The main route into Butana during the rainy season is through the New Halfa - Es Soubagh track road.

- Population in central Butana increases in the rainy season with pastoralists coming from surrounding states and the return of farmers residing in the Butana periphery to cultivate their land in Butana. The sale of sheep also increases during the period September to November.
- The New Halfa market is important to the inhabitants in the central plains for consumption and trade purposes with those around the periphery travelling to a wide range of markets located along the Nile or close to the Khartoum to Port Sudan road. The residents of central Butana have a preference for the New Halfa market over the Tamboul market (on the western periphery of Butana) because it is both a market for livestock and crop trade as well as for consumer goods. Kinship ties are also stronger with the population in New Halfa where many of the Butana residents have settled in the wake of the 1984 drought.
- Despite the widespread poverty in Butana, the community capability assessment showed that local communities in Butana had a reasonable level of capability, i.e., a combination of skills, assets and attitudes that communities possess to manage resources. The community capability assessment revealed the following key features of relevance to the RAP: (i) common vision; (ii) trust within communities; (iii) there is a good degree of self reliance with communities helping themselves to organize collective initiatives and resolve problems. Main areas that require further strengthening are fund management and management of community initiatives.
- There are a number of federal and state initiatives for construction of rural roads in the south of Butana locality from the national road Khartoum- Gadaref towards Es Soubagh: This refers to the Gadaref - Husheib road, an 80 km long road. Similarly, New Halfa is being linked through a gravel road to Arab 6 and to Rattaga.

IV. PROJECT DESCRIPTION (KSF 3)

A. The knowledge base: Lessons from previous/ongoing projects

48. The major lessons from IFAD's experience to date in rural access in Sudan could be summarized as follows:

49. **Rationale for rural roads.** Poor rural access (beside lack of peace) represents the main factor for market failure to secure remunerative prices for output and regular flow of consumer goods and services to rural communities.

50. **Impact of rural roads.** Proximity from main urban areas and access to better marketing services are a major factor in improvement of household income. This is illustrated by the Bara - El Obeid road in North Kordofan State whereby linking Bara, a rural town with a horticulture and livestock production base, to the urban center of El Obeid where the wholesale market is located, led to a decrease by 60% of travel time, decrease by 50% of fuel consumption and repair costs, and enabled producers to double their sale prices. Evidence from the case study on Empowerment of the Rural Poor in Volatile Policy Environments in Sudan (IFAD/IFPRI, 2005) also points to the fact that proximity to urban centers and to markets constitutes a good determinant for higher community capabilities.

51. Major constraints that affect the **sustainability** of road projects and that will be addressed in the design of the present project include:

- Shortage of technically qualified staff at the lower and middle level management of government.
- Construction costs have risen recently due to the lack of competition and timely funding. The contractors' resort to self financing which results in significant increase of 30%-40% in construction costs due to the implicit inclusion of a cost of financing and the-now acceptable

practice of quota allocation of roads for construction on non-competitive bases.

52. Additional relevant lessons drawn from the Rural Road Travel and Transport Review, RTT, (IFAD, 2007), as well as from the Pilot Community Based Rural Infrastructure Project for Highland Areas (669-YE) are reiterated here given their relevance to the project:

- Current **priorities and focus** in the roads sector emphasise maintenance of existing infrastructure, partial rehabilitation and spot improvements rather than new construction in order to increase and consolidate efficient and maintainable network. A focus on maintenance is due to resource constraints and inability of economies under stress to maintain expanded infrastructure.
- **Project design.** The mechanism and approach for delivery of RTT sub-component(s) should include procedures for identification of needs and prioritisation of interventions and procurement; approaches for planning and implementation of interventions; outline of resources requirement and budgets; definition of financial flow mechanisms, institutional interfaces and key stakeholders responsibilities; and indicators for monitoring and reporting.
- **Alignment of interventions with national policies.** It is important to understand the policies and development frameworks supporting RTT, agriculture and poverty alleviation to be able to define interventions that are likely to be accommodated in the long - term country development strategies. This should for example take into account the ongoing decentralisation reforms in various countries and define interventions in a way that they contribute to enhancing the process of reform.
- **Capacity building.** Ensure availability of adequate technical skills and capacities for planning and implementation of RTT interventions through capacity building initiatives tailored to the needs of local partners. Capacity building should also be geared to support decentralisation reforms.
- **Community participation.** Discuss and agree with communities on the strategy, process of participation and the tools to be used in order to ensure transparent approach. The process should be gender inclusive and aim at instilling accountability and local ownership. In which case, design and cost estimates for local interventions should also involve beneficiary participation.
- **Gender mainstreaming.** Targeting of women should mainly be at the level of benefits of investment and not only their involvement in voluntary work. Deliberate measures should be designed through a consultative process to ensure fair participation of men and women in the improvement of RTT infrastructure.
- **Road maintenance.** Before commitment to investment, one has to ask a question: who will maintain the road (or basic access infrastructure) after completion, and where will the resources come from? Any assumption on maintenance should be strongly supported by the existence of track record of reliable financial resources.

53. The design of RAP adopts the spot improvement approach and preventative maintenance as the most suitable solution to rural access in Butana given the area's low population density, the seasonal trade activity, and relatively short rainy season. The lessons learned on capacity building, community participation and gender mainstreaming, as well as road maintenance are also integrated in the project design.

B. Opportunities for rural development and poverty reduction

54. Efficient Rural Roads Travel and Transport (RTT) facilitates access to basic socio-economic goods and services, information, technologies, rural and agricultural development and markets, and thereby contributes to poverty reduction and agricultural growth. High potential farming areas cannot be developed without adequate access to infrastructure and services. Poor rural feeder and village access roads severely impede access of smallholder farmers to markets (and vice versa), and increase transaction costs due to the high economic costs of transporting goods. This is the case in the Butana where the marketing of livestock and dairy products is hampered by impassable roads during the rainy season. The results from the Bara-El Obeid road also confirm the significant economic benefits generated by roads and their potential impact to reduce poverty by creating new job opportunities and improving producers' access to markets.

55. The IFAD financed Butana Integrated Rural Development Project addresses marketing constraints with regards to : (i) market access through the construction of crossings, and (ii) producers' bargaining power through the organization and training of producers, and the set up of a marketing information system. However, the investments in crossings are judged insufficient to realize the intended benefits of the marketing component and will now be complemented with additional investments under RAP.

56. In view of large needs for rural road network and limited financing available, the spot improvement approach - first piloted in Southern Sudan - has the potential to ensure maximum road coverage at an optimal km cost of accessibility. When combined with preventative management and capacity building of state institutions, the approach has the potential to increase the sustainability of road investments in rural areas. In view of the potential investments in rural roads estimated at USD 100 million under the ARP, the approach has the potential to be replicated.

C. Project goal and objectives

57. The project will contribute towards the COSOP 2009-2012 goal of "empowering the rural poor to increase their food security, incomes and resilience to shocks". The main project objective is improved access of the rural population in Central Butana to markets and social services. Three key results are expected from the project:

- Rural roads upgraded in Central Butana and regularly maintained. Target is 144 km.
- Communities are trained to manage road tolls and to engage in labor based maintenance contracts;
- State capacity is strengthened to plan, design, supervise, manage and maintain rural feeder roads using the spot improvement approach.

D. Alignment with country rural development policies and IFAD strategies

58. **Alignment with country rural development policies and investments.** As demonstrated earlier the project is aligned with the ARP focus on rural infrastructure for productive and marketing purposes. The ARP has an indicative programme of rural road construction, yet this programme does not consider spot improvement as an alternative approach to improve rural access, it does not pay attention to much needed capacity building of the MPPPU, and it does not address preventative maintenance, three gap areas that RAP plans to fill.

59. The ARP secretariat annually allocates resources destined to construct a specific length of rural road for each state. In Gadaref, for example, ARP approved the construction of 90 km in 2008 and again in 2009. Also in New Halfa, Kassala State, the state government signed a contract for the construction of Um Al Gora- New Halfa road. The RAP would extend the road network planned under the ARP in Gadaref and Kassala States to the traditional rainfed areas and the site of concentration of livestock during the rainy season.

60. **Alignment with IFAD strategies.** Access of the rural poor to markets is a key IFAD strategic objective under the Strategic Framework 2007-2010. The project is in compliance with the provisions contained in the Learning Note on community participation in planning, priority setting, implementation and follow up to infrastructure and rural travel and transport projects and the stock taking exercise for Rural Travel and Transport (IFAD, 2007). Using the infrastructure checklist as reference, the design team defined the scope and modalities for road maintenance and the mechanism for mainstreaming the proposed capacity building and management package in Government road policy. The project approach includes the following main elements: (i) strategic rural road plans for each state linked to a strategic national road network plan; (ii) improved technical (particularly qualified and experienced engineers) capacity to draw road specification, design, supervision and maintenance, (iii) competitive and transparent bidding, (iv) preventative maintenance of roads and community awareness of and participation in road maintenance, which should help decrease the overall capital costs of rural roads.

E. Project components

61. The Project is organized into 3 main components: (i) physical rehabilitation and construction of rural feeder roads; (ii) capacity building and institutional development; (iii) project management. The project duration is 4 years.

Component 1 - Physical Rehabilitation and Construction of Rural Feeder Roads

62. This component would achieve result 1 "access roads upgraded in Butana and regularly maintained". The target is 144 km of rural roads improved and regularly maintained in Butana. The component consists of 4 main activities: the road development; the implementation of conservation and water control works; the studies to support field activities for road development; and the establishment of a community road fund to finance maintenance works.

63. **Road development.** The spot improvement approach to road development will result in a complete rehabilitated and upgraded road comprised of sections that will be a composite of different classifications and specifications depending on existing soil conditions (see Table 6 below). The access road alignments selected are the Arab 6 to Es Soubagh (84 km) and Es Soubagh to Husheib (60 km), a 144 km long road servicing 5 main markets (Es Soubagh, Rattaga, New Halfa, Gadaref, Tamboul), and covering 2 localities in 2 states. These road alignments were endorsed in a memorandum of understanding signed by the Gadaref and Kassala states.

Table 6: Specifications of the improved Arab 6-Es Soubagh-Husheib road

Description	Total Length of Road	Improved section to Class d.3 (full gravel length)	Improved section to Class e.2 (spot improvements)	Graded sections to accompany (spot improvements)
Arab 6 to Es Subagh				
Arab 6 Village to Es Sadda (a)	20	20		
Arab 6 Village to Es Sadda (b)	24		6	18
Es Sadda to Es Subagh	40		10	30
Sub-total	84	20	16	48
Es Subagh to Hushieb				
Es Subagh to Husheib	60		15	45
Sub-total	60	0	15	45
TOTAL LENGTHS	144	20	31	93
Note: Final lengths and locations of improved sections will derive from preparation surveys and design currently underway. In between the fully improved road sections, grading and road shaping together with improved drainage will be carried out. The net result will be a completed road with sections improved to different standards as set out above.				

64. The physical survey and design works for the proposed alignment are currently being developed by the MPPPU in Gadaref State and will be submitted for field verification and validation by mid-October 2009. The field verification and validation should be conducted in collaboration between the NHBA, the MPPPU in Kassala and Gadaref, the representatives of the localities of Butana and River Atbara, and the representatives of communities serviced by the road. Once the design is validated, the tender documents will be prepared with contract award planned once the project is approved by the IFAD Executive Board in December 2009 and the project enters into force. It is worth noting here that the road construction will be fully undertaken by contractors.

65. **Conservation and water control works.** In the Butana area, roads have not been engineered, but have just been developed out of traditional tracks and gully crossings. In many places, poor alignments across gulleys and drainage lines have developed and crossing points are often much longer and more difficult than they need be. With the increase in livestock in the area and the lower control of over grazing, most gulleys are actively eroding and measures are needed to ensure that these gulleys are controlled and do not undermine any roads once built. In addition to this,

improved water control and management will be needed through the construction of upslope cut-off/interceptor drains and diversion bunds, erosion control measures and structures and turnout and relief drains. Similarly, downstream slope control structures and checks will be needed along with vegetative measures to stabilise the gullies.

66. **Studies.** Studies will include the survey and design of the rural road as well as additional studies as required for the design of more complex structures such as bridges on large seasonal streams and crossings downstream from dams. It is to be noted that the survey and design works have already started and are being carried out by the MPPPU in Gadaref State. These costs will be retroactively financed by the IFAD grant once it becomes effective.

67. **Community Road Fund.** The Community Road Fund (CRF) constitutes the proposed financing arrangement for road maintenance. The CRF will be financed by: (i) funds from the RAP to cover the administrative and maintenance expenditures during the first 3 years of the project; (ii) levy of fees by the localities towards road maintenance from vehicle operators and from market agents. The CRF will be used to finance routine, periodic and preventative maintenance works using contracted local labour from the Butana communities as well as private sector contractors depending on the type of maintenance works required. The annual maintenance costs for the New Halfa - Es Soubagh - Husheib road is approx USD 95 000 at road completion. The CRF will consist of an account with the BDA and a committee under the BDA. The committee will be composed of members representing the communities serviced by the road, the executive officers in the localities of Butana and River Atbara with possible extension to the localities of Central Gadaref and New Halfa, the BDA Director and Financial Controller as well as the Road Department from the MPPPUs in Gadaref and Kassala which will act as the secretary of this committee. The Commissioners of Butana and River Atbara will alternate as chairpersons of this committee. The CRF will have a dedicated bank account replenished by funds from RAP and as of 2013 the CRF will be totally funded from road tolls and market fees. The CRF account will be managed by the Director and the Financial Controller of the BDA. It is planned that the two localities of Butana and River Atbara pass administrative decrees in 2010 for the levy of road tolls and market fees towards the maintenance of the road. The detailed implementation arrangements of the CRF are presented in annex 7.

Component 2: Capacity Building and Institutional Development

68. This component would achieve result 2 "communities are trained to manage road tolls and to engage in labor based maintenance contracts" and result 3 "state capacity strengthened to plan, supervise, manage, and maintain rural feeder roads using the spot improvement approach". The component consists of 3 main activities: institutional support to the Road Departments in the MPPPUs of Kassala and Gadaref; training of the Road Departments in the MPPPPUs; and training of communities on the implementation of soil and water conservation works and implementation of labour based works.

69. **Institutional support to the Road Department of the MPPPUs.** The project will provide office renovation, office equipment as well as survey and design softwares. The detailed list of equipment is provided in tables 16 and 17 in working paper 1.

70. **Training for the Road Departments in the MPPPUs.** Training for the Roads Department will include the following topics: English language course; computer assisted design and use of specialized software; surveying; construction management and supervision; specifications and procurement; road design; and road maintenance. The training approach will consist of : (i) on-the-job training whereby each site proposed for spot improvement is treated as a training site for the staff of the Road Department; and (ii) short formal courses to complement the on-the-job training. A consultancy firm will be recruited by the BDA to provide the necessary training and technical assistance to the MPPPUs and to produce a series of manuals and guidelines for the training of the engineers dealing with the roads and the water control and conservation works. It is the intention that standards for rural feeder roads will be developed for all financiers whether government or donors so that consistent and sustainable approaches are adopted.

71. **Training for the Community Based Organizations on conservation and water control works.** The training for the communities will include the following topics: soil and water conservation techniques that are appropriate to limit gully erosion and to protect the road structure; the management of labour based contracts. The training approach will consist in: (i) the training of trainers whereby soil and water conservation extension agents from the State Ministry of Agriculture and Irrigation and competent persons selected by community based organizations will become "master

trainers" in order to train others in step with the demand for maintenance and soil and water conservation works; (ii) on site training whereby suitable sites are selected close to the communities to implement on the job training and practical demonstration of the soil and water conservation techniques; (iii) formal training of community based organizations on the management of labour based contracts for soil and water conservation and maintenance of the rural feeder road. The training will be delivered by the Consultancy firm recruited by the BDA.

Component 3: Project Management

72. This component would ensure that the project is managed effectively, efficiently and in a sustainable manner. The component consists of 3 main activities: recruitment of and the consultancy firm by the BDA to provide supervision of the road works and capacity building to the Road Departments of the MPPPU and to the communities (as indicated under component 2); monitoring of the project by the NHBA; coordination with BIRDP community based and marketing activities.

73. **Recruitment of the Consultancy firm by the BDA.** The BDA will recruit through an international competitive process a consultancy firm to supervise the road works and to build the capacity of the road departments in the MPPPU and the communities. The consultancy firm will make available to the BDA a dedicated technical team that will work under the management and supervision of the Director of the Butana Development Agency. The team will be composed of a road engineer with substantial experience in contract supervision and management, a construction engineer and a number of qualified national consultants in the following area of expertise, computer assisted design, structures design, hydrologist, procurement, soil and water conservation and training. The estimated inputs in terms of person months for the various members of the technical team are indicated in table 25 of working paper 1.

74. **Monitoring by the NHBA.** The NHBA will assign from its staff (located in headquarters and in the field) a monitoring team who will be responsible for the following: (i) reviewing project deliverables and clearing them from a technical view point (this covers the infrastructure development plan, road and traffic surveys, design works, works supervision reports, the operational manuals for rural roads); (ii) undertaking a comparative analysis of the results of the project approach versus the more conventional approach of the construction of fully designed roads and capital repairs; (iii) assessing the progress of the project and reporting accordingly to the Director of the NHBA, the MPPPU and the Board of Directors of the BDA.

75. **Coordination with BIRDP community based and marketing activities.** In order to realize maximum synergy between the RAP and the BIRDP, the BIRDP implementation approach will be adjusted as follows:

- BIRDP will give priority to working with the 21 communities situated along the Arab 6 - Es Soubagh - Husheib road. These communities will receive the full environmental, production and marketing package offered by the BIRDP;
- The rehabilitation of the markets and the establishment of the market information system scheduled under the BIRDP will be synchronized with the road improvement. This refers to the markets serviced by the proposed road and included in the market rehabilitation plans of the BIRDP, such as Es Soubagh and Um Al Gora;
- The Edeid El Humur area where a rainy season market is expected to be established under BIRDP, will receive the required number of crossings to make it passable and to make it accessible from the Husheib-Es Soubagh link;
- The crossings planned under BIRDP and for which an amount of USD 2.7 million was budgeted, would be planned strategically to complement the alignment proposed under RAP. In particular, crossings will be established to facilitate access to : (i) the Edeid El Humur area where a rainy season market is expected to be established under BIRDP; (ii) the Tamboul livestock market;
- As part of the community mobilization undertaken by BIRDP, road committees will be formed under the aegis of the community development committee established at village level and already registered under the voluntary association law;
- The Planning and Monitoring system of the BDA which now covers the BIRDP, will be expanded to include the planning, result measurement and progress reporting for the RAP;
- The terms of reference of the following staff of the BDA will be amended to take into consideration the integration of the RAP in their work programmes: the Director, the Financial Controller, the Accountant, the M&E Officer, the assistant M&E Officer, the Gender and

Community Development Officer and the Natural Resources Management Officer. Their involvement in the RAP will entail an additional workload for this personnel that will be remunerated through the payment of overtime and allowances.

V. IMPLEMENTATION AND INSTITUTIONAL ARRANGEMENTS (KSF 4)

A. Institutional development and outcomes

76. Out of the 3 project results, 2 results relate to institutional development and outcomes. These are as follows:

- Communities are trained to manage road tolls and to engage in labor based maintenance contracts;;
- State capacity strengthened to plan, design, supervise, and maintain rural feeder roads using the spot improvement approach.

77. These results also constitute the pillars of project sustainability as will be discussed later. Approximately 17% of the project base costs are dedicated to the achievement of these 2 results under component 2 capacity building and institutional development.

B. The collaborative framework

The main implementing agencies and their roles

78. The Lead Agency is the **Butana Development Agency**. The BDA will play the role of financier and quality assurance. Its role is to ensure synergy of the interventions targeting the Butana particularly BIRDP and RAP in order to effectively reduce poverty and ensure sustainable management of natural resources; financing project interventions and accounting for fund use; ensuring the quality of works by hiring qualified consultancy firm to carry out the training of the Road Departments of the MPPPU and the communities; monitoring project performance and deciding on corrective actions as needed. The BDA Board of Directors will be expanded to include representation from the MPPPU in Kassala and Gadaref at ministerial level.

79. The consultancy firm hired by the BDA will provide a technical team responsible for supervising the constructions works of the road as well as provision of training and backstopping to the Road Department and the communities. More specifically, its scope of work will include: (i) review and update designs and detailed engineering drawings to ensure that works are in accordance with the post improvement approach and that costs are maintained within the overall budget envelope; (ii) provide construction supervision and quality control of all works; (iii) provide structured and practical training for all assigned staff of the Road Departments in the MPPPU of Gadaref and Kassala in planning, design and improvement of Rural Access Roads and on site training in construction supervision and maintenance of rural access roads; (v) provide training to the Road Departments staff in the design of soil & water conservation and runoff control and associated road maintenance and assist them to provide similar training to local Communities; (vi) provide guidance, advice and assistance in the development of a Community Road Fund (CRF) for funding Annual Routine Road Maintenance programme. The full scope of work of the consultancy firm is available in working paper 1 appendix G.

80. **The National Highways and Bridges Authority (NHBA)**. The NHBA - given its mandate and collaboration with the states - will undertake monitoring of the project with a view to mainstreaming its approach in the Government policy and programmes for rural roads, and to replicating the approach under the rural roads programme of the ARP.

81. **The State Ministry of Physical Planning and Public Utilities (MPPPU) in Gadaref and Kassala States**. The State Ministry of Physical Planning and Public Utilities in both Gadaref and Kassala States will be the contracting authority for the proposed road. The Road Departments in the MPPPU will be responsible for the adaptation of the road design to the field realities, the certification of the contractors' payments, and the planning and supervision of the road maintenance works. As the capacity of the Road Department to undertake these activities is currently limited, the staff of the Road Department will be receiving formal and on-the-job training to build their capacities in road planning, design, management, supervision and maintenance. The Road Department in the MPPPU will be

responsible for the final commissioning of the road. In order to facilitate the capacity building process and clarification of roles and tasks within the Road Departments, the director of the Road Department will organize the existing staff in 2 teams: (i) a construction team composed of a construction engineer, design engineer, 2 surveyors, and 2 site supervisors; (ii) a rural road maintenance team composed of an engineer and a surveyor. The Director of the Road Department as well as the staff involved in the 2 teams will receive allowances from the RAP (included in annex 4, the detailed costs of component 2).

82. **The localities in Butana and River Atbara** are the main localities concerned by the road alignment proposed under RAP. The role of these two localities will be to: (i) present to the local councils for discussion and approval an administrative decree regulating the levy of road tolls and market fees, and the channelling of the proceeds to the Community Road Fund; (ii) coordinating with the neighboring localities of New Halfa and Central Gadaref the levy of fees in order to avoid duplication and over-taxation of vehicle operators and market agents; (iii) review of the plans for road maintenance works and effectiveness of their implementation; (iv) act as the contracting authority for the maintenance works.

83. **The communities situated along the road.** There are about 21 communities serviced by the proposed road. These communities all have village development committees registered as voluntary associations and engaged in broad based development work. The village development committees will establish road committees to participate in the following: (i) validation of the design works and maintenance works proposed for the road; (ii) supervision of the construction of the road and reporting any mishandling to the localities and the BDA; (iii) reporting road breaches during the rainy season; (iv) applying for labour based contracts for the maintenance of the road; (v) supervision of maintenance works; (vi) monitoring the number, gender, age and socio-economic profile of the community members participating in the training and employed for the soil and water conservation and maintenance works. The communities will also elect their representatives to the Community Road Fund.

84. The **Community Road Fund** will be a committee established within the BDA. It will be responsible for planning and financing the maintenance of the road. The committee will have its own by-laws stipulating the role of each party with regards the collection of fees for the maintenance works, the planning of the works, the design and supervision of the works, the contracting of the works and finally the monitoring. The CRF will be composed of members representing the communities serviced by the road, the executive officers in the localities of Butana and River Atbara with possible extension to the localities of Central Gadaref and New Halfa, the BDA as well as the Road Department from the MPPPU in Gadaref and Kassala. The Commissioners of Butana and River Atbara will alternate in chairing this committee.

Technical partners in implementation

85. The project will call on other partners to assist in the implementation of the RAP. These include:

- The private contractors selected for the implementation of road improvement and maintenance works;
- The State Ministry of Agriculture to assist in the design and implementation of conservation and water control works.

Component wise implementation

86. **Component 1 Physical Rehabilitation and Construction of Rural Roads:** a qualified contractor will be recruited through national competitive bidding and following a prequalification process. The Road Departments of the MPPPU will monitor the performance of the contractor and will certify the payments for the completed works. The MPPPU will be the contracting authority for the construction of the road. **The Consultancy firm will carry out the role of construction supervision and will also assist the BDA in the set up of the Community Road Fund.** The Community Road Fund will be established within the BDA and will be responsible for planning, financing and reporting on road maintenance works.

87. **Component 2 Capacity Building and Institutional Development:** The BDA will hire a Consultancy firm to organize and implement the training targeting the Road Departments of the MPPPU and the communities. The Gender and Community Development Officer of the BDA with assistance from the 2 locality development teams based in Es Soubagh and New Halfa and the Natural Resources Management Officer will carry out the community awareness raising, mobilization and organization to form road committees, sensitize them to their role and launch a campaign to encourage users to pay for the road maintenance. The Gender and Community Development Officer and the locality development teams will also mobilize the road committees to nominate both men and women for the training on soil and water conservation and for the labour opportunities created by the maintenance works.

88. **Component 3 Project Management:** The BDA will be responsible for the project coordination and financial management, as well as for synchronizing activities between the BIRDP and the RAP in order to improve incomes in the beneficiary communities. The NHBA will carry out regular monitoring to the project to assess the performance of the contractor and consultancy firm, to monitor the progress of works, and to analyze the results of the spot improvement and preventative maintenance approach with those of more conventional road construction methods.

Links with complementary projects

89. The links to complementary projects are presented in Key file table 3. The main projects the RAP will link with are:

- The **BIRDP**. The RAP complements the livestock development and market component of the BIRDP. The effectiveness of this complementarity will be measured by the following indicators: (i) the rehabilitation of markets, the establishment of the market information system and the construction of the road are happening in tandem; (ii) decrease in the time and cost of transportation and increase in sale prices obtained by producers.
- The **Agriculture Revival Programme, rural feeder road programme**. The project will liaise with the rural infrastructure working group to present the project progress and results with a focus on the comparative advantage of the project spot improvement and preventative maintenance approach compared to more conventional approaches, as well as the level of awareness and capacity within the MPPPU and the communities to implement the proposed approach. The representative from the ARP rural infrastructure working group will be invited to participate in the project supervision missions.
- The **EU financed model project for the construction of the Kadugli-Talodi road** in the State of South Kordofan. Plans are underway to establish joint activities with the EU funded project for establishing a forum to exchange experiences about road procurement arrangements; road maintenance arrangements; as well as for developing a governance framework for the recruitment and implementation of road contracts.

Integration within the IFAD country programme

90. As described earlier, RAP contributes directly to the achievement of the strategic objective of increased access of the rural poor women and men to markets and to microfinance identified in the 2009-2012 country programme strategy. The RAP specifically contributes to the following milestone indicator of approx 200 km of roads constructed in project areas; and outcome indicator of at least 20% producers' access markets in project areas.

Project supervision arrangements

91. The project will be directly supervised by IFAD and the Government of National Unity namely the Ministry of Finance and National Economy (representative of the Borrower), National Highways and Bridges Authority and the ARP rural infrastructure working group. In order to ensure institutionalization of the knowledge and results of the project, the project design stresses the supervisory and monitoring role of the NHBA and has made budget provisions in this respect. For the purpose of the supervision of this project, IFAD will retain the services of an international road engineer for the full duration of the project to carry out the following: (i) visit the project sites twice a year during the construction and maintenance period which coincides with the dry season; (ii) monitor the progress of the works, the performance of the consultancy firm hired by the BDA; (iii) assessing the compliance of contractors with technical specifications, and that payments effected are consistent

with the progress of works; (iv) assessing the adequacy of the budgetary estimations for the road maintenance works. Moreover, during 2010, IFAD will recruit an economist to design the implementation of the road tolls system in collaboration with the localities.

C. Results-based M&E

92. The logframe in annex 2 outlines the main results expected from the project. The M&E cycle of the project will be as follows:

- **Planning.** The development of the annual work plan and budget of the RAP will be a collaborative endeavour involving the BDA, the Road Departments and the localities. The annual work plan will specify the length of roads to be improved and maintained, the mobilization of maintenance funds in the CRF and the training efforts required during the year. The AWPB will be submitted to the BDA Board of Directors for endorsement then submitted to IFAD for no objection.
- **M&E.** The M&E system will monitor performance of the project as well as its results and sustainability. The performance monitoring will essentially consist in the supervision of the construction and maintenance works and reporting on their progress and adherence to agreed technical specifications and schedule of works. This technical work will be conducted by the BDA consultancy firm supervising the road as well as the Road Department of the MPPPU. Monitoring project results and sustainability will be carried out at community, locality and state levels and will involve the road committees, the BDA development team and the BDA M&E officers, as well as the Road Departments of the MPPPU. The result based M&E framework is explained in annex 6.
- **Learning.** The Road Departments and the NHBA will be required to compile a data base on the physical and economic results of rural roads constructed under conventional methods and under spot improvement. With the M&E information collected from the RAP, the Road Departments and the NHBA will be able to draw comparative analysis between conventional approaches and the spot improvement approach, their respective strengths and weaknesses and further actions proposed. It is expected that this comparative analysis will also be reflected in the selection/ technical specifications and maintenance arrangements of roads proposed in the state level road infrastructure plan.

VI. PROJECT BENEFITS, COSTS AND FINANCING

A. Project benefits

93. The project detailed benefit analysis is available in working paper 2. The total number of beneficiaries is expected to be 130 000 persons equivalent to about 15 000 producer households, corresponding to the households directly benefiting from the increased accessibility to markets in the rainy season. It is expected that there will be 1700 additional women trading in the main markets serviced by the road. It is estimated that the indirect beneficiaries represent 136 000 persons, namely the population in River Atbara locality with business and kinship ties to Butana. In terms of economic and social benefits, the main aggregate results for the project area are as follows (summarized from working paper 2):

- The main benefit is an increase in the value of agricultural production by USD 46 000 in the short term, by USD 140 000 in the medium term, and by USD 233 000 in the long term. This is based on 25% increase in farm gate prices;
- The savings in vehicle operating costs, which will amount to USD 5 million in 2013 and will be increasing to USD 6.5 million in 2017 provided the roads are regularly maintained and that the number of trucks are regularly increasing by 5% every year. This means that 70% of the total benefits from the access road will accrue to vehicle operators;
- The increased income from women entrepreneurial activities in the trade sector are valued at USD 80 000.
- The net present value of the road is estimated at USD 22 million at 12% discount rate over a period of 20 years.
- The internal rate of return of the road is estimated at 22%.

94. Given the high rate of benefits accruing to vehicle operators, a quick analysis highlights the important impact of the combined effect of interventions enhancing production and vocational skills combined with the construction of access roads. The results at household level are based on the impact surveys carried out under the North Kordofan Rural Development Project for integrated interventions in the area of agriculture production and life skills training and an impact survey for the construction of the Bara - Obeid road under the same project. The assumption here is that the traditional production systems in the locality of Bara in North Kordofan and the central area of the Butana are comparable. The results of the project interventions on households' incomes are as follows:

Table 7. Household benefits from the project, based on results obtained under NKRDP

Income sources	Household income without interventions	Household income with productivity enhancing interventions and life skills training	Household income with productivity enhancing interventions and life skills training, in addition to easier access to markets	Comments
Crop production in SDG	1017	1242	2018	30% production sold at 25% higher price
Animal production in SDG	1501	1501	2767	30% sale in rainy season, with 280% increase in gross margins (higher livestock prices and lower transport costs in rainy season)
Wage labour in SDG	1945	1752	2920	Increase in wage labour opportunities and number of working days
Remittances in SDG	968	1076	1076	Unchanged as decreased reliance on migration
Trading activities in SDG	1200	2110	2110	Unchanged given the increasing competition
Collection of range and forestry products in SDG	1945	2699	2699	Unchanged given diversification of income sources
Total for household income in SDG	8639	10380	13591	
Total per capita in SDG	1234	1483	1941	
Total per capita in USD	493	593	776	

B. Summary cost table

95. The total costs for the project are estimated at USD 14.96 million. Component 1 for the physical rehabilitation and construction of rural roads represents 80% of base costs; component 2 for capacity building and institutional development represents 17% of base costs; and component 3, Project management, represents 3% of base costs.

Table 8: Project costs by Component (USD)

Components Project Cost Summary	(SDP Million)					(US\$ Million)				
				%	% Total				%	% Total
	Local	Foreign	Total	Foreign Exchange	Base Costs	Local	Foreign	Total	Foreign Exchange	Base Costs
1. Physical Rehabilitation and Construction of Rural Roads /a	19.12	7.65	26.77	29	80	7.65	3.06	10.71	29	80
2. Capacity Building and Institutional Development	3.50	2.11	5.62	38	17	1.40	0.85	2.25	38	17
3. Project Management	0.96	0.05	1.00	5	3	0.38	0.02	0.40	4	3
Total BASELINE COSTS	23.58	9.80	33.38	29	100	9.43	3.92	13.35	29	100
Physical Contingencies	1.79	0.77	2.56	30	8	0.72	0.31	1.02	30	8
Price Contingencies	4.87	1.88	6.76	28	20	0.42	0.16	0.59	28	4
Total PROJECT COSTS	30.24	12.46	42.70	29	128	10.57	4.39	14.96	29	112

/a 10% Contingencies estimated for civil works

C. Project financing: IFAD financing, co-financing, government, partners and beneficiary financing

96. The project will be financed by IFAD, the Government and beneficiaries. IFAD financing, in grant terms under the Debt Sustainability Framework, amounts to USD 12.95 million. Government counterpart fund is estimated at USD 1.92 million approximately in form of exemption of taxes and duties. Beneficiaries will contribute to the maintenance cost of the rural roads - through payment of road tolls and market fees - to an estimated amount of USD 0.09 million.

Table 9: Project Costs by Financier

Components by Financiers (US\$ Million)	The Government		IFAD		Beneficiaries		Total		Local		
									For.	(Excl. Duties &	
	Amount	%	Amount	%	Amount	%	Amount	%	Exch. Taxes	Taxes	
1. Physical Rehabilitation and Construction of Rural Roads /a	1.79	14.7	10.33	84.6	0.09	0.7	12.21	81.6	3.50	6.91	1.79
2. Capacity Building and Institutional Development	0.12	5.2	2.22	94.8	-	-	2.34	15.6	0.87	1.34	0.12
3. Project Management	0.01	2.3	0.41	97.7	-	-	0.42	2.8	0.02	0.39	0.01
Total PROJECT COSTS	1.92	12.9	12.95	86.6	0.09	0.6	14.96	100.0	4.39	8.65	1.92

/a 10% Contingencies estimated for civil works

D. Flow of funds, disbursement, procurement, audit

97. **Flow of funds and disbursement.** The MOFNE will authorize the BDA to open a special account in EURO for the specific purpose of the RAP, as well as a dedicated project account in local currency to handle payments in local currency for project related activities. The special account and project accounts will be managed under the principle of double signature by the BDA Director and the Financial Controller. The initial deposit in the special account would amount to EURO 842 000 to finance the first 6 months of project expenditures (please see annex 4 on the summary of main cost tables).

98. Disbursements for items each costing less than USD 20 000 (or equivalent) would be made against Statements of Expenditure. The Project would retain the relevant documents and make them readily available for inspection and review by the supervision missions and the auditors. No taxes and duties would be financed out of the proceeds of the IFAD grant. The disbursement accounts and the associated financing arrangement is presented below.

Table 10: Disbursement accounts and financing rules for IFAD grant

Disbursement Accounts by Financiers (US\$ Million)	Total Amount	FINANCIER AND FINANCING % NET OF TAXES
A. Civil works	9.97	IFAD 100%
B. Vehicles and Equipment	0.18	IFAD 100%
C. Training, technical assistance and studies	2.28	IFAD 100%
D. Other Recurrent Costs	0.37	IFAD 100%
E. Road Maintenance Costs		
IFAD Financed Road Maintenance	0.15	IFAD 100%
Beneficiary Financed Road Maintenance	0.09	BENEFICIARY 100%
TOTAL	13.04	

¹ IFAD will finance 100% of the Road maintenance fund up to year 3 of the project and the beneficiaries would finance 100% of year 4 of the project

99. **Retroactive financing** is proposed to reimburse costs incurred during the design of the project and intended to accelerate its effective start-up. This will cover the cost of the survey of Arab 6 - Es Soubagh - Husheib road, up to a maximum of USD 120 000 under the training, technical assistance and studies category for the survey and design of the Arab 6 - Es Soubagh - Husheib road and the cost for the prequalification of consultancy firms and contractors. The funds will be advanced by the BDA against Government funding, and will be claimed once the RAP is effective based on submission of supporting documentation. .

100. **Procurement.** The procurement of works, goods and services will be in line with the IFAD procurement guidelines. Moreover, IFAD, GoNU and other development partners (potentially the EU) will jointly develop a governance framework for the road works with the aim of increasing competitiveness, transparency and value for money in this sector. A detailed 18 month procurement plan for the project was developed in working paper 3, and will be developed annually as part of the AWPB. The thresholds for prior review and the procurement modalities were determined as follows:

Table 7: Prior review thresholds

Procurement Method	Threshold For Procurement Method USD	Prior Review Threshold
NCB (Goods)	> 50 000	All contracts
Shopping (Goods)	< 50 000	None
NCB (Works)	> 50 000	All contracts
Shopping/Community Participation (Works)	< 50 000	The first 5 contracts
ICB (Services)	> 50 000	All contracts

101. **Audit.** The RAP will be subject to an annual audit by the General Auditor's Chamber, similar to the audit provisions for the BIRDP. Both the accounts of the RAP and the CRF will be audited.

VII. PROJECT RISKS AND SUSTAINABILITY (KSF 5)

A. Risk analysis

102. The main risks and risk mitigation responses are summarized in table 12 hereafter.

Table 8: Critical Risks and Mitigation Measures

Risks	Risk rating	Risk Mitigation Measures
Country Level: Reduced support to traditional rainfed agriculture either through reduced ARP budget or reduced GoNU development budget	M	The State of Gadaref committed to schedule the Husheib-Gadaref road in the 2010 budget and to fund it from available resources for state development. Similarly in the State of Kassala, the construction of the New Halfa - Arab 6 road is under-way and the construction of the New Halfa - Um Al Gora has been contracted out and the works are set to start in October 2009.
Entity Level: - The BDA has a limited implementation record to date, and no expertise in road construction and maintenance. - Non synchronized implementation between market rehabilitation under the BIRDP and road improvement under RAP.	M	- A qualified consultancy firm will be recruited to build BDA expertise in the road sector and to organize and provide capacity building to the Road Departments in the MPPUs and to the communities. - BIRDP activity planning is being readjusted to ensure synchronization with RAP. Moreover, BIRDP and RAP are directly supervised to allow an early identification of performance problems and implementation of appropriate corrective actions.
Project Level - Mismanagement of procurement, or contract award or contract supervision. - Unwillingness of users to pay for the road maintenance.	M	A number of safeguards are put in place to ensure efficiency and effectiveness of procurement for the road works: - Prequalification of contractors with assessment based on field visits and reference check; - Prequalification of the consultancy firms that will be providing the technical team in the BDA; - IFAD will retain a road engineer to supervise the progress of works and the compliance with technical specifications. - IFAD and GoNU will develop a governance framework for the procurement of road works in project year 1. - A study to assess users' willingness to pay and the feasibility of the CRF was carried out in June 2009 and is provided in annex 7. On the basis of these calculations, the road tolls and market fees should be sufficient to cover the routine and periodic maintenance costs. - Administrative decree to levy road tolls and market fees towards the maintenance of the road is scheduled to be endorsed in 2010.
Reporting/Auditing Weak M&E which does not generate required data to carry out result measurement of the project and comparative analysis between spot improvement and conventional approaches for the construction of rural roads.	M	A number of safeguards are built into the project design to ensure adequate M&E (annex 6): - division of roles and responsibilities for the collection of different level indicators; - selection of quantifiable and easily collected data; - reliance on known data collection techniques (road survey, traffic survey, RIMS survey)
Risk ratings: High Risk (H) - greater than 75 percent probability that the outcome/result will not be achieved; Substantial Risk (S) -probability of 50 - 75 percent that the outcome/result will not be achieved; Modest Risk (M) - probability of 25 - 50 percent that the outcome/result will not be achieved; Low or Negligible Risk (N) - probability of less than 25 percent that the outcome/result will not be achieved.		

B. Exit strategy and post-project sustainability

103. The scenario adopted for project sustainability rests on the following elements:

- The capacity of the Road Departments in the MPPPUs in Gadaref and Kassala is built up thus enabling these departments to carry out satisfactory design works and supervision and maintenance for the rural road network of the states. The design missions assessed that the engineering staff in the State MPPPUs is young, academically well qualified but lacks technical guidance and hands on experience. The project will provide the required technical guidance (through technical backstopping, development of operational manuals, etc...) as well as on-the-job training for the staff of the Road Departments.
- The routine and periodic maintenance of the rural road is implemented and is financed from the proceeds of the road tolls and market fees. The structure and operation of the Community Road Fund were discussed with the communities, the localities and the Road Departments in the MPPPUs of Gadaref and Kassala, thus validating in principle the model proposed. Moreover a feasibility study of the CRF suggests that the proceeds from the road tolls and the market fees would largely cover the maintenance costs.
- The spot improvement and preventative maintenance approach is replicated at state and federal level. The two key partners for the mainstreaming and replication of this approach are the NHBA and the rural infrastructure working group of the ARP. Both organizations will be involved in the monitoring and supervision of the project, its mid term review and its completion assessment.

104. The following indicators are taken as milestones for project sustainability:

At mid-term	At completion
<ul style="list-style-type: none">- The Road Departments' technical capacity is assessed as satisfactory.- The CRF is set up and facilitating the implementation of maintenance works.- M&E data indicates that spot improvement is more adapted for rural roads than the conventional approach to road construction.	<ul style="list-style-type: none">- The Road Department has presented satisfactory road design works and is carrying out supervision for new road alignments.- The CRF annual fund replenishment covers 100% maintenance costs.- Spot improvement approach replicated on 200 km rural roads and incorporated as part of the rural roads programme in the ARP.

VIII. INNOVATIVE FEATURES, LEARNING AND KNOWLEDGE MANAGEMENT (KSF 6)

A. Innovative features

105. The main innovative feature in the RAP is the spot improvement approach to road construction and the establishment of a Community Road Fund for the maintenance of the rural road. This approach is deemed to be best suited for the environmentally sensitive rainfed areas given their low population density, the seasonal trade activity, impassability of the roads during the relatively short rainy season and the insufficient financial resources available to meet the great need for road development. Provisions were included in the design of the project to develop the methodology for spot improvement and road maintenance, as well as for its replication.

B. Project knowledge products and learning processes

106. The knowledge products of the project consist of: (i) the operation manuals for the rural roads design, construction, supervision and maintenance; (ii) the progress reports and assessment studies on project effectiveness; (iii) the comparative analysis between the project approach and more conventional approaches to rural road construction and maintenance. The dissemination and use of these products will be facilitated through annual stakeholder workshops. The stakeholder workshops

will bring together the representatives of the Ministry of Finance and National Economy, the rural infrastructure working group of the ARP, the NHBA, the MPPPU in Gadaref and Kassala States, the BDA, the localities and community representatives. Donors financing road networks such as the European Union will be invited to share experiences from the rural feeder road programme under implementation in the states of South Kordofan and Blue Nile.

C. Regional knowledge networking

107. The project will benefit from the IFAD technical advisory division efforts to establish best practices in the area of rural transport, and to establish partnerships with the International Forum for Rural Transport and Development and the Sub-Saharan Africa Transport Policy Program. Progress and supervision reports will be shared with the Forum to promote learning.

IX. NEXT STEPS

108. The next steps include:

- The validation of the design works proposed for the road. The MPPPU of Gadaref State is expected to submit the revised design works by mid October 2009. The design works will be validated in the field with NHBA, state, locality and community representatives.
- Launch of the expression of interest for consultancy firms and contractors with a view to their pre-qualification. The NHBA has shared with the design completion mission a list of qualified firms. The process for the prequalification is explained in annex 8, start-up activities.
- Negotiation of the grant agreement in time to present the project for approval to the Executive Board in December 2009. IFAD will agree with the Government to add the following as additional covenants: (i) the passing of the administrative decree on road tolls in 2010; (ii) the development of a good governance framework for rural roads construction, supervision and maintenance in 2010.

ANNEXES

- 1.Contents of the Project Life File
- 2.Updated Result-based log frame
- 3.Key files
- 4.Summary of main cost tables
- 5.Organizational organigramme
- 6.Result-based M&E
- 7.CRF implementation arrangements
- 8.Start-up activities

ANNEX I: CONTENTS OF THE PROJECT LIFE FILE

All the documents of the Sudan Operations are available on IFAD Desk Site at the following link:
<http://xdesk/sites/pn/sdn/Operations/Forms/AllDocuments.aspx>

Country Programme Documents

1. Result-Based COSOP for Sudan, April 2009. [../COUNTRY%20DOCUMENTS/RB%20COSOP%20BOARD%20DOCUMENTS/EB-2009-96-R-42.pdf](http://xdesk/sites/pn/sdn/Operations/Forms/AllDocuments.aspx)
2. Sudan Country Programme Evaluation, OE, 2008 ([../Sudan%20Country%20Programme%20Evaluation%20CPE%20200708/Version%20Final%20CPE%20report.doc](http://xdesk/sites/pn/sdn/Operations/Forms/AllDocuments.aspx))
3. Case Study for Sudan, Empowering Rural Poor in a volatile Policy Context, IFAD/IFPRI, 2005 ([../SudanCaseStudyReport.pdf](http://xdesk/sites/pn/sdn/Operations/Forms/AllDocuments.aspx))

Sudan Project Design Documents

1. Gash Sustainable Livelihoods Regeneration Project, Appraisal report [../GASH-1263/GSLRP%20APPRaisal%20REPORT/GSLRP%20APPRaisal%20MAIN%20REP.%20WITH%20APPENDICES/Sudan%20GSLRP%20Appraisal%20Report%20Volume%20I.pdf](http://xdesk/sites/pn/sdn/Operations/Forms/AllDocuments.aspx)
2. Butana Integrated Rural Development Project, Appraisal report [../BIRDP-1332/BIRDP%20APPRaisal%20REPORT/BIRDP%20APPRaisal%20REP.%20AND%20APPENDICES/ANNEXES/BIRDP%20Appraisal%20main%20report.pdf](http://xdesk/sites/pn/sdn/Operations/Forms/AllDocuments.aspx)

Lessons learned from similar projects

1. Sudan, North Kordofan Rural Development Project, Completion Report, 2008 ([../NKRDP-1045/Project%20Completion%20Report%20\(PCR\)/NKRDP-PCR.doc](http://xdesk/sites/pn/sdn/Operations/Forms/AllDocuments.aspx))
2. IFAD, Comprehensive Review of IFAD Rural Roads, Travel and Transport (RTT) Experiences, 1994-2007
3. IFAD, Yemen, Pilot Community-Based Rural Infrastructure Project in Highland Areas - Loan 669-YE, Appraisal report (<http://xdesk/sites/pn/yem/Pilot%20CommunityBased%20Rural%20Infrastructure%20Project/Forms/AllItems.aspx>)

ANNEX II: RESULT-BASED LOG FRAME

Narrative Summary	Verifiable Indicators	Means of Verification	Assumptions/Risks
Goal			
COSOP Goal: contribute to empower the rural poor to increase their food security, incomes and resilience to shocks	<ul style="list-style-type: none"> • Increase of rural incomes from USD 500/ capita to USD 800/ capita, in country programme areas • Reduction in the prevalence of malnutrition in children under 5 • No. of households with improvement in household asset index 	<ul style="list-style-type: none"> ▪ UNICEF survey in the concerned states. ▪ RIMS survey at baseline and completion 	<ul style="list-style-type: none"> - Sustained and increasing investments for social and productive services in drought and conflict affected areas. - Increased GoNU support to the rainfed agriculture sector.
Purpose/Objective			
Project objective: Improved access of the rural population in Central Butana to markets and social services.	<ul style="list-style-type: none"> • 15 000 producers benefiting from market access by project end. • 1700 additional women trading in the markets served by rural feeder roads by project end. • Decrease in transportation from 2 days at Es Sadda to 1 hour during rainy season • Decrease in transportation tariff from approx 15 SDG to 8 SDG/ trip • Increase in road traffic volume: from an average of 71 vehicles/day to 96 by mid term and to 124 by project end. 	<ul style="list-style-type: none"> ▪ Baseline survey, mid-term and completion reports ▪ Road traffic survey ▪ BIRDP Progress reports 	<ul style="list-style-type: none"> - Increased agriculture surplus as a result of production support received from the BIRDP - Increased producers' gross margin by 80% as a combined effect between the BIRDP and RAP; - Increase in sale prices for livestock by 25% in rainy season
Results of the project			
1) Rural roads upgraded in Central Butana and regularly maintained	<ul style="list-style-type: none"> • Number of km improved in Butana. Target: 144 km by year 3 of project • 144 km of road maintained by project end 	<ul style="list-style-type: none"> ▪ Project progress report 	Administrative decree for road toll and market fee levies passed, complied with by road users and enforced by communities and localities.
2) Communities are trained to manage road tolls and to engage in labor based	<ul style="list-style-type: none"> • Tolls collected cover annual O&M costs. Target USD 95 000 as of project year 3 	<ul style="list-style-type: none"> ▪ Project progress report 	

maintenance contracts.	<ul style="list-style-type: none"> Number of labor days in labor based contracts, by gender and by poverty group. Target: 10 000 labour day aggregate by project end, at least 50% women and 50% below 30 years. 		
3) State capacity strengthened to plan, design, supervise, and maintain rural feeder roads, using the spot improvement approach	<ul style="list-style-type: none"> Performance of the Road Departments in MPPPU of Kassala and Gadaref rated satisfactory Lengths of new roads designed using the spot improvement approach: at least 200 km by project end Road network plan established by year 2. State budget allocation based on the road network plan. Community Road Fund expanded to other rural road networks in Kassala and Gadaref by project end. 	<ul style="list-style-type: none"> Project progress report Consultancy firm assessment of the performance of the Road Departments in Gadaref and Kassala 	
Activities of the project			
1.1. Rehabilitation and construction of identified priority rural feeder roads in Butana area	<ul style="list-style-type: none"> Number of kms constructed/ rehabilitated annually 	<ul style="list-style-type: none"> Project progress reports 	Competitive contracting to ensure cost efficiency
1.2. Implementation of conservation and water control works around the roads selected for rehabilitation/ construction	<ul style="list-style-type: none"> Number of conservation and water control works implemented annually 	<ul style="list-style-type: none"> Project progress reports 	
1.3. Establishment of a community road fund	<ul style="list-style-type: none"> Composition and by-laws of Community Road Fund established by year 2 of project. 	<ul style="list-style-type: none"> Project progress reports 	Willingness of communities to pay for the maintenance of the road
2.2. Training of community on road maintenance and managing maintenance contracts	<ul style="list-style-type: none"> 21 road committees established by year 3 of project. 21 road committees with women in leadership 	<ul style="list-style-type: none"> Project progress report 	

	position by year 3 of project. <ul style="list-style-type: none"> About 400 community members trained by project end, 50% women, 50% below 30 years 		
3.1. Capacity building of states through: <ul style="list-style-type: none"> - establishment of rural roads management units in the Road Dept.MPPPU - training in selection and design of spot improvements, supervision - Training on improved road maintenance - Planning, surveying and costing of priority roads. 	<ul style="list-style-type: none"> Number of vehicles procured Number of offices rehabilitated and equipped Number of government staff trained by gender Types of training topics provided 	<ul style="list-style-type: none"> Project progress report 	Clear evidence of the advantages of the proposed approach compared to the conventional approach, demonstrated by RAP to NHBA, the MPPPU and communities
4.1. Project management through: <ul style="list-style-type: none"> - recruitment of consultancy firm - validation of design and supervision of works by NHBA. - coordination with BIRDP. 	<ul style="list-style-type: none"> Number of TA mobilized and duration Number of monitoring visits by NHBA Marketing activities under BIRDP synchronized with RAP 	<ul style="list-style-type: none"> Project progress reports 	<ul style="list-style-type: none"> - Selection of high calibre technical team - Synchronised implementation between RAP and BIRDP

ANNEX III: KEY FILE

Table 1: Rural Poverty and Agricultural/Rural Sector Issues

Priority Areas	Affected Group	Major Issues	Actions Needed
Weak and deteriorating road network due to limited budget, engineering capacity and limited attention to preventative maintenance	Poor rural HHs living in Butana Vehicle operators Traders	<ul style="list-style-type: none"> Isolated areas during the rainy seasons Higher cost of transportation High vehicle operating costs Poor maintenance of rural roads 	<ul style="list-style-type: none"> Improve accessibility for rural population during the rainy season Improve road maintenance Build public sector capacity in road construction planning and management.
High transport and transaction costs in the movement of agricultural products during the rainy season	Poor rural farmers	<ul style="list-style-type: none"> High road tariffs applied on roads during the rainy season High cost of livestock movement in the rainy season Low farm gate prices 	<ul style="list-style-type: none"> Reduce transport costs Increase livestock sales Increase agricultural productivity and access to higher farm gate prices Improve access to agricultural and livestock markets
Women specific issues: Limited economic activity. Poor access to basic health services and education	Women	Limited economic activities for women. Difficulty in accessing basic health and education services (distance, absence of means of transportation).	<ul style="list-style-type: none"> Awareness campaign to promote girls' education. Improve access to primary health services and schools. Train women in vocational skills and income generating activities. Increase women access to market places Reduce transport time and cost.
		•	•

Table 2: ORGANISATION CAPABILITIES MATRIX

Organisation	Strengths	Weaknesses	Opportunities/Threats	Remarks
Enablers				
National Highways and Bridges Authority (NHBA) Under Ministry of Roads and Bridges	<ul style="list-style-type: none"> National coverage: 7 regional offices Cumulates responsibilities of studies, design, construction using its own equipment, supervision of works, management and maintenance. Provide design and supervision services on demand to States Technical capacity is satisfactory. Toll collections constitute its main revenues. 	<ul style="list-style-type: none"> NHBA receives only 10% of the tolls collected, the rest goes to the Ministry of Finance 	<ul style="list-style-type: none"> NHBA can develop state technical capacity in road planning, design, supervision and maintenance. NHBA can also act as a champion for the project approach and its replication to other states 	
	•		•	•
State Ministry of Physical Planning and Public Utilities (MPPPU)	<ul style="list-style-type: none"> Has a Road Dept. responsible for survey and supervision of road works. Developing special packages for experienced engineers to draw them from the private sector 	<ul style="list-style-type: none"> Very limited funds to attract qualified staff Limited design capacity Weak technical capacity Limited supervision capacity Few experienced staff available; Inadequate quality control Dependent on NHBA for feasibility and design study Maintenance is not undertaken for State roads as no maintenance dept. exists at State or locality level 	<ul style="list-style-type: none"> The Agriculture Revival Programme has allocated approx 7.5% of its total budget to rural infrastructure inclusive of agricultural roads. This is a good opportunity to build needed capacity in this sector, as well as expand the network of agricultural roads. 	<ul style="list-style-type: none"> Limited budgetary allocation to ARP at national level Policies for road sector exist only for national roads in terms of construction, management and maintenance; Roads that are not of national importance are delegated to the States
Agriculture Revival Programme (ARP) Rural Infrastructure Working group	<ul style="list-style-type: none"> Chaired by the Fed. Minister of Irrigation and Water Resources and includes the NHBA; 25% of ARP programme allocated to rainfed agriculture and 7.5 % to rural infrastructures including roads; The construction of the ARP financed roads are now supervised by NHBA 	<ul style="list-style-type: none"> Absence of a planning framework for the identification, prioritization and maintenance of the rural road network in proposed states. The road programme under ARP does not foresee capacity building of the MPPPUs. 	<ul style="list-style-type: none"> Opportunity: Potential for the rural infrastructure working group to act as champion for a planned and integrated construction/ maintenance approach to the rural road network. Budgetary restrictions due to decreased oil prices may limit funding of the ARP road 	

			programme.	
Butana Development Agency (BDA)	<ul style="list-style-type: none"> Recently established (in 2007) by Presidential decree Coordinate inter-state development efforts and covers 10 localities in 5 States Fund mobilization is part of its mandate, as well as strengthening the stakeholders' organizations for the regulated access and use of natural resources. Familiar with IFAD and Government financial and procurement guidelines and procedures. 	<ul style="list-style-type: none"> Organization is recently established. absence of a rural road engineer among its current staff. - 	<ul style="list-style-type: none"> Synchronize interventions in market development with the activities of rural roads improvement. The BDA represents a good organizational framework for inter-state collaboration. 	
Service Providers				
Road contractors	<ul style="list-style-type: none"> Wide range of national contractors prepared to undertake rural roads construction. NHBA has qualified 45 companies as grade A in terms of technical and financial capacities. Experienced national road engineering staff available in the private sector. 	<ul style="list-style-type: none"> Experienced road engineers mostly based in Khartoum and few of them available at state level. Increased reliance of contractors on self-financing which increases the total cost of construction and limits state supervision. 	<ul style="list-style-type: none"> Opportunity: Greater efficiency in road construction thanks to funding availability Threat: Non competitive market for the recruitment of contractors 	
	•	•	•	•
Client Organisations				
The Association for the Development of Central Butana	<ul style="list-style-type: none"> Federation of 31 community based organizations; Received technical support from UNDP; Has capital and financial assets Put in place a entrepreneurial management approach Contracts out work and services to the private sector and member community based organizations 	<ul style="list-style-type: none"> The executive board has outlived its term; No audit of account effected; Infrequent general assembly meetings. 	<ul style="list-style-type: none"> Opportunity: the association can play a role in community mobilization for road maintenance; and the process for establishing the apex organization can be adapted for the establishment of the community road fund. 	<ul style="list-style-type: none"> Communities located along the proposed road alignment have community organizations and are member of this apex organization. 4 members of the executive board of the community organization are from the villages situated along the road alignment.

Table 3: COMPLEMENTARY DONOR INITIATIVE/PARTNERSHIP POTENTIAL

Donor/Agency	Nature Of Project/Programme	Project/Programme Coverage	Status	Complementarity/ Synergy Potential
IFAD	<ul style="list-style-type: none"> Butana Integrated Rural Development Project 	<ul style="list-style-type: none"> The Butana rainy season grazing ground which covers 10 localities in 5 states. BIRDP provides support to communities to manage rangelands and water sources in a sustainable manner; access extension services and veterinary care; access markets on better terms; and engage in value adding activities (example dairy activities); organize collectively to manage productive activities. BIRDP provides support to states and localities in regulating access to rangelands, in strategically planning water resources, in facilitating outreach to communities and in improving the management of markets. 	<ul style="list-style-type: none"> On-going Completion date: 30 September 2016 	<ul style="list-style-type: none"> Complements resources available under the marketing component of the BIRDP and increases resources dedicated to rural infrastructure in Butana. Facilitates mobility during the wet season and this is expected to reflect positively on the trade links between Butana. New Halfa and Gedaref, on livestock sales prices, and on better access to services (especially health and education).
EU	<ul style="list-style-type: none"> Sudan Productive Capacity Recovery Programme – Model project 	<ul style="list-style-type: none"> South Kordofan State Construction of the Kadugli-Talodi road 	<ul style="list-style-type: none"> On-going 	<ul style="list-style-type: none"> Exchange of knowledge on : procurement; capacity building; road maintenance arrangements; and community participation in construction and maintenance works; M&E system. Joint development of a governance framework.
EU	<ul style="list-style-type: none"> Eastern Sudan Recovery and Development Project 	<ul style="list-style-type: none"> State of Red Sea, Kassala and Gadaref Supports the Eastern Sudan Peace Agreement with quick impact activities implemented by line ministries, localities and NGOs. Sectoral focus on: agriculture, water, land development and vocational training 	<ul style="list-style-type: none"> In start-up phase; duration 3 years 	<ul style="list-style-type: none"> The Butana area is not covered by this project. However the project management team (Mott McDonald) has experience in the spot improvement approach and can be a good source of knowledge.
Government of National Unity	<ul style="list-style-type: none"> Agriculture Revival Programme – rural infrastructure component 	<ul style="list-style-type: none"> States of Gedaref, Gezira, Sennar, Blue Nile, White Nile, South Kordofan and South Darfur Construction of new roads. Likely reliance on contractor pre-financing for their execution which would increase costs by 30%. 	<ul style="list-style-type: none"> On-going Completion: 2011 	<ul style="list-style-type: none"> Project assumes that the capital investments for the state of Gedaref would take place especially for roads currently under construction. Project approach to be replicated by the MPPPU to the prioritization, planning and preventative maintenance of other state level rural roads.

Table 4: TARGET GROUP PRIORITY NEEDS AND PROJECT PROPOSALS

Typology	Poverty Levels And Causes	Coping Actions	Priority Needs	Project Response
Poor Households with less than 10 heads of small ruminants	<ul style="list-style-type: none"> - No ownership of livestock or ownership does not exceed 10 heads of small ruminants. - Receive livestock for herding or milking. - Cultivate up to 5 feddans of sorghum because of labour limitations - Have no access to mechanized land preparation - Rely on wage labour and charity from kinship members. - Women employed in milking small ruminants, cultivation tasks when fields are near, and income generating activities such as mat weaving. - No children enrolled in schools. - Full time residents in Butana, and settled in villages and farigs. 	<ul style="list-style-type: none"> - Reliance on ad hoc charity and wage labour. - Benefit from community solidarity for access to water in the dry season. 	<ul style="list-style-type: none"> - Restocking. - Basic services, incl. water. 	<ul style="list-style-type: none"> ▪ Better access to markets esp. in the rainy season. ▪ Reduced transport cost. ▪ Improved water accessibility and range carrying capacity. ▪ Increase women mobility and facilitate access to market ▪ Facilitate access to services, in particular health services an schools.
Average Households with ownership of livestock about 30 small ruminants and 10 heads of cattle/ camels	<ul style="list-style-type: none"> - Cultivate up to 50 feddans of rainfed sorghum with mechanized assistance for initial ploughing. - Seasonal wage labour for men in nearby irrigated schemes or through migration to Saudi Arabia (where the men usually work as herders). - Women involved in milking small ruminants, processing milk into ghee and yogurt, weeding and harvesting of crops when fields near to the house. - Bi-local residents with houses in the center and periphery of Butana. 	<ul style="list-style-type: none"> - Seasonal wage labour for men. - Move to better pastures in the rainy and dry season. - Sale of livestock. 	<ul style="list-style-type: none"> - Water and basic services. - Access to markets 	<ul style="list-style-type: none"> ▪ Better access to markets esp. in the rainy season. ▪ Reduced transport cost. ▪ Improved water accessibility and range carrying capacity. ▪ Increase women mobility and facilitate access to market ▪ Facilitate access to services, in particular health services an schools.
Well-off Households with ownership of large herds approximately 100 to 300 heads of small and large animals.	<ul style="list-style-type: none"> - Cultivate approximately 250 fed of rainfed agriculture. They have access to mechanization. - Have access to irrigated and mechanized farms that they cultivate through sharecropping. - Have access to trucks to transport animals to better pastures and tankers to transport 		<ul style="list-style-type: none"> - Access to low cost feed resources. - Access to markets. 	<ul style="list-style-type: none"> ▪ Better access to markets esp. in the rainy season. ▪ Reduced transport cost. ▪ Improved water accessibility and range carrying capacity. ▪ Increase women mobility and facilitate access to market ▪ Facilitate access to services, in

	<p>and sell water.</p> <ul style="list-style-type: none"> - Engage in trade activities. - Either settled within Butana or transhumants from outside Butana. 			<p>particular health services an schools.</p> <ul style="list-style-type: none"> ▪ Improved value for money for access to improved range, water facilities and markets.
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Table 5: STAKEHOLDER MATRIX/PROJECT ACTORS AND ROLES

Component	Sub-Component	Coverage	Perennial Institutions Involved	Potential Contractors/ Periodic Inputs	Other Possible Partners in Execution
Physical rehabilitation and construction of feeder roads	Rehabilitation and construction of feeder roads in Butana area	- Arab 6-Es Subagh - Es Subagh - Husheib	- State Ministry of Physical Planning and Public Utilities - Butana Development Agency	Private contractors	Communities organized in road committees
	Implementation of conservation and water control works along selected feeder roads	- Arab 6-Es Subagh - Es Subagh - Husheib	- State Ministry of Physical Planning and Public Utilities - BDA	Private sector and the state ministry of agriculture	
	Community Road Fund	Communities serviced by Arab 6-Es Subagh – Husheib	BDA, localities, road committees, Road Departments of the MPPPU	Private sector for maintenance works when applicable	
Capacity Building and Institutional Development	Training of Communities on soil and water conservation and management of labour based contracts	Communities serviced by Arab 6-Es Subagh – Husheib	BDA	Private consultancy firms and NGOs	
	Institution development and training for the Road Dept of the MPPPU in Gadaref and Kassala States	Gadaref and Kassala States	- State Ministry of Physical Planning and Public Utilities - BDA	Private consultancy firms and NGOs for training, technical assistance and studies	NHBA
Project Management	- Recruitment of consultancy firm in BDA - Set up and operation of the project M&E - Collaboration with the NHBA in monitoring of project - Coordination with BIRD	Butana	- Butana Development Agency - NHBA	Private consultancy firms and individual consultants	ARP working group for rural infrastructure

ANNEX III: PROJECT COST TABLES

Summary Cost Table 1: Components Project Cost Summary

Components Project Cost Summary	(SDP Million)					(US\$ Million)				
				%	% Total				%	% Total
	Local	Foreign	Total	Foreign Exchange	Base Costs	Local	Foreign	Total	Foreign Exchange	Base Costs
1. Physical Rehabilitation and Construction of Rural Roads /a	19.12	7.65	26.77	29	80	7.65	3.06	10.71	29	80
2. Capacity Building and Institutional Development	3.50	2.11	5.62	38	17	1.40	0.85	2.25	38	17
3. Project Management	0.96	0.05	1.00	5	3	0.38	0.02	0.40	4	3
Total BASELINE COSTS	23.58	9.80	33.38	29	100	9.43	3.92	13.35	29	100
Physical Contingencies	1.79	0.77	2.56	30	8	0.72	0.31	1.02	30	8
Price Contingencies	4.87	1.88	6.76	28	20	0.42	0.16	0.59	28	4
Total PROJECT COSTS	30.24	12.46	42.70	29	128	10.57	4.39	14.96	29	112

/a 10% Contingencies estimated for civil works

Summary Cost Table 2: Expenditures Accounts Project Cost Summary

Expenditure Accounts Project Cost Summary	(SDP Million)			(US\$ Million)			% Foreign Exchange	% Total Base Costs
	Local	Foreign	Total	Local	Foreign	Total		
I. Investment Costs								
A. Civil Works	17.93	7.68	25.61	7.17	3.07	10.24	30	77
B. Vehicles and Equipment								
Vehicles	0.16	0.20	0.36	0.06	0.08	0.14	56	1
Materials and Equipment	0.06	0.32	0.38	0.02	0.13	0.15	85	1
Subtotal	0.21	0.52	0.74	0.09	0.21	0.29	71	2
C. Technical Assistance and Training								
International Technical Assistance	-	1.43	1.43	-	0.57	0.57	100	4
National Technical Assistance	2.49	-	2.49	0.99	-	0.99	-	7
Training	0.86	-	0.86	0.35	-	0.35	-	3
Studies	0.63	-	0.63	0.25	-	0.25	-	2
Subtotal	3.98	1.43	5.41	1.59	0.57	2.16	26	16
Total Investment Costs	22.12	9.63	31.75	8.85	3.85	12.70	30	95
II. Recurrent Costs								
A. Field Allowances	0.41	-	0.41	0.16	-	0.16	-	1
B. Operational Costs	0.40	0.17	0.57	0.16	0.07	0.23	30	2
C. Road Maintenance Fund	0.65	-	0.65	0.26	-	0.26	-	2
Total Recurrent Costs	1.46	0.17	1.63	0.58	0.07	0.65	10	5
Total BASELINE COSTS	23.58	9.80	33.38	9.43	3.92	13.35	29	100
Physical Contingencies	1.79	0.77	2.56	0.72	0.31	1.02	30	8
Price Contingencies	4.87	1.88	6.76	0.42	0.16	0.59	28	4
Total PROJECT COSTS	30.24	12.46	42.70	10.57	4.39	14.96	29	112

Summary Cost Table 3

Project Components by Year -- Base Costs
(US\$ Million)

	Base Cost				
	2010	2011	2012	2013	Total
1. Physical Rehabilitation and Construction of Rural Roads /a	1.60	6.33	2.68	0.10	10.71
2. Capacity Building and Institutional Development	0.88	0.69	0.45	0.22	2.25
3. Project Management	0.10	0.12	0.10	0.09	0.40
Total BASELINE COSTS	2.58	7.14	3.22	0.41	13.35
Physical Contingencies	0.15	0.62	0.26	-	1.02
Price Contingencies					
Inflation					
Local	0.09	0.88	0.71	0.17	1.86
Foreign	0.01	0.09	0.06	0.00	0.16
Subtotal Inflation	0.11	0.97	0.78	0.17	2.02
Devaluation	-0.07	-0.67	-0.55	-0.14	-1.43
Subtotal Price Contingencies	0.03	0.29	0.22	0.04	0.59
Total PROJECT COSTS	2.76	8.05	3.70	0.45	14.96
Taxes	0.34	1.08	0.48	0.03	1.92
Foreign Exchange	0.90	2.43	1.05	0.02	4.39

/a 10% Contingencies estimated for civil works

Summary Cost Table 4: Expenditure Accounts by Components – Base Costs

Expenditure Accounts by Components - Base Costs (US\$ Million)	Physical Rehabilitation and Construction of Rural Roads	Capacity Building and Institutional Development	Project Management	Total	Physical Contingencies	
					%	Amount
I. Investment Costs						
A. Civil Works	10.19	0.05	-	10.24	10.0	1.02
B. Vehicles and Equipment						
Vehicles	-	0.14	-	0.14	-	-
Materials and Equipment	-	0.15	-	0.15	-	-
Subtotal	-	0.29	-	0.29	-	-
C. Technical Assistance and Training						
International Technical Assistance	-	0.57	-	0.57	-	-
National Technical Assistance	-	0.71	0.28	0.99	-	-
Training	-	0.29	0.06	0.35	-	-
Studies	0.25	-	-	0.25	-	-
Subtotal	0.25	1.57	0.34	2.16	-	-
Total Investment Costs	10.44	1.92	0.34	12.70	8.1	1.02
II. Recurrent Costs						
A. Field Allowances	-	0.16	-	0.16	-	-
B. Operational Costs	-	0.17	0.06	0.23	-	-
C. Road Maintenance Fund	0.26	-	-	0.26	-	-
Total Recurrent Costs	0.26	0.33	0.06	0.65	-	-
Total BASELINE COSTS	10.71	2.25	0.40	13.35	7.7	1.02
Physical Contingencies	1.02	0.01	-	1.02	-	-
Price Contingencies						
Inflation						
Local	1.49	0.28	0.09	1.86	-	-
Foreign	0.14	0.03	0.00	0.16	-	-
Subtotal Inflation	1.63	0.30	0.09	2.02	-	-
Devaluation	-1.15	-0.22	-0.07	-1.43	-	-
Subtotal Price Contingencies	0.48	0.09	0.02	0.59	7.1	0.04
Total PROJECT COSTS	12.21	2.34	0.42	14.96	7.1	1.07
Taxes	1.79	0.12	0.01	1.92	8.3	0.16
Foreign Exchange	3.50	0.87	0.02	4.39	7.3	0.32

Summary Cost Table 5: Components by Financiers

Components by Financiers
(US\$ Million)

	The Government		IFAD		Beneficiaries		Total		For. Exch.	Local (Excl. Duties & Taxes)	
	Amount	%	Amount	%	Amount	%	Amount	%		Taxes	Taxes
1. Physical Rehabilitation and Construction of Rural Roads /a	1.79	14.7	10.33	84.6	0.09	0.7	12.21	81.6	3.50	6.91	1.79
2. Capacity Building and Institutional Development	0.12	5.2	2.22	94.8	-	-	2.34	15.6	0.87	1.34	0.12
3. Project Management	0.01	2.3	0.41	97.7	-	-	0.42	2.8	0.02	0.39	0.01
Total PROJECT COSTS	1.92	12.9	12.95	86.6	0.09	0.6	14.96	100.0	4.39	8.65	1.92

/a 10% Contingencies estimated for civil works

Summary Cost Table 6: Procurement Arrangements

**Rural Access Project
Procurement Arrangements**
(US\$ Million)

	Procurement Method					Community Participation in Procurement	N.B.F.	Total
	International Competitive Bidding	National Competitive Bidding	Consulting Services: QCBS	Local Shopping	Direct Contracting			
A. Civil Works /a	-	11.7 (10.0)	-	-	-	-	-	11.7 (10.0)
B. Vehicles, equipment and materials	0.3 (0.2)	-	-	-	-	-	-	0.3 (0.2)
C. Technical Assistance and Training	0.6 (0.6)	-	1.1 (1.1)	-	0.6 (0.6)	-	-	2.3 (2.3)
D. Maintenance Fund	-	-	-	-	-	0.3 (0.1)	-	0.3 (0.1)
E. Recurrent Costs	-	-	-	0.4 (0.4)	-	-	-	0.4 (0.4)
Total	0.8 (0.8)	11.7 (10.0)	1.1 (1.1)	0.4 (0.4)	0.6 (0.6)	0.3 (0.1)	-	15.0 (13.0)

Note: Figures in parenthesis are the respective amounts financed by IFAD

/a Encouraged to form ventures with international consulting firms

Summary Cost Table 7

Disbursements by Semesters and Government Cash Flow						
(US\$)	Financing Available			Costs to be Financed by Government		
	IFAD	Beneficiaries	Total	Project	Cash	Cumulative
	Amount	Amount		Costs	Flow	Cash Flow
1	1.21	-	1.21	1.38	-0.17	-0.17
2	1.21	-	1.21	1.38	-0.17	-0.34
3	3.48	-	3.48	4.02	-0.54	-0.88
4	3.48	-	3.48	4.02	-0.54	-1.42
5	1.61	-	1.61	1.85	-0.24	-1.66
6	1.61	-	1.61	1.85	-0.24	-1.90
7	0.17	0.04	0.21	0.22	-0.01	-1.91
8	0.17	0.04	0.21	0.22	-0.01	-1.92
Total	12.95	0.09	13.04	14.96	-1.92	-1.92

Summary Cost Table 8: Expenditure Accounts by Financier

Expenditure Accounts by Financiers
(US\$ Million)

I. Investment Costs

A. Civil Works

B. Vehicles and Equipment

Vehicles

Materials and Equipment

Subtotal

C. Technical Assistance and Training

International Technical Assistance

National Technical Assistance

Training

Studies

Subtotal

Total Investment Costs

II. Recurrent Costs

A. Field Allowances

B. Operational Costs

C. Road Maintenance Fund

Total Recurrent Costs

Total PROJECT COSTS

The Government		IFAD		Beneficiaries		Total		For.	Local	Duties &
Amount	%	Amount	%	Amount	%	Amount	%	Exch.	(Excl. Taxes)	Taxes
1.76	15.0	9.97	85.0	-	-	11.73	78.4	3.52	6.45	1.76
0.06	44.0	0.08	56.0	-	-	0.15	1.0	0.08	-	0.06
0.02	15.0	0.13	85.0	-	-	0.15	1.0	0.13	-	0.02
0.09	29.1	0.21	70.9	-	-	0.30	2.0	0.21	-	0.09
-	-	0.59	100.0	-	-	0.59	4.0	0.59	-	-
-	-	1.04	100.0	-	-	1.04	7.0	-	1.04	-
-	-	0.36	100.0	-	-	0.36	2.4	-	0.36	-
-	-	0.26	100.0	-	-	0.26	1.7	-	0.26	-
-	-	2.25	100.0	-	-	2.25	15.0	0.59	1.66	-
1.85	12.9	12.43	87.1	-	-	14.27	95.4	4.32	8.11	1.85
-	-	0.17	100.0	-	-	0.17	1.2	-	0.17	-
0.04	15.0	0.20	85.0	-	-	0.24	1.6	0.07	0.13	0.04
0.04	15.0	0.15	53.4	0.09	31.6	0.28	1.9	-	0.24	0.04
0.08	11.2	0.52	76.0	0.09	12.8	0.69	4.6	0.07	0.54	0.08
1.92	12.9	12.95	86.6	0.09	0.6	14.96	100.0	4.39	8.65	1.92

Summary Cost Table 9: Disbursement Accounts by Financiers

Disbursement Accounts by Financiers

(US\$ Million)

	Government		IFAD		Beneficiaries		Total		For. Exch.	Local (Excl. Taxes)	Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%			
A. Civil works	1.76	15.0	9.97	85.0	-	-	11.73	78.4	3.52	6.45	1.76
B. Vehicles and Equipment	0.08	31.4	0.18	68.6	-	-	0.26	1.7	0.18	-	0.08
C. Training, technical assistance and studies	0.01	0.3	2.28	99.7	-	-	2.29	15.3	0.63	1.66	0.01
D. Other Recurrent Costs	0.04	8.7	0.37	91.3	-	-	0.41	2.7	0.07	0.30	0.04
E. Road Maintenance Costs											
IFAD Financed Road Maintenance	0.03	15.0	0.15	85.0	-	-	0.18	1.2	-	0.15	0.03
Beneficiary Financed Road Maintenance	0.02	15.0	-	-	0.09	85.0	0.10	0.7	-	0.09	0.02
Subtotal	0.04	15.0	0.15	53.4	0.09	31.6	0.28	1.9	-	0.24	0.04
Total PROJECT COSTS	1.92	12.9	12.95	86.6	0.09	0.6	14.96	100.0	4.39	8.65	1.92

Detailed Cost Table: Component 1

Detailed Costs (US\$)

I. Investment Costs

A. Civil Works - Road Development

1. Arab 6 to Es Subagh

a. Road Formation

Arab 6 Village to Es Sadda (a) /a

Unit	Quantities					Unit Cost	Base Cost ('000)				
	2010	2011	2012	2013	Total		2010	2011	2012	2013	Total
Lumpsum	-	0.7	0.3	-	1	2.378.088,0	-	1 665	713	-	2 378

Arab 6 village to Es Sadda (b) /b

Lumpsum	-	1	-	-	1	702.626,0	-	703	-	-	703
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Es Sadda to Es Subagh

Lumpsum	0.2	0.55	0.25	-	1	1.171.044,0	234	644	293	-	1 171
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Subtotal

234	3 011	1 006	-	4 252
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b. Grading and Drainage /c

Arab 6 village to Es Sadda (b) /d

Lumpsum	-	1	-	-	1	58.909,0	-	59	-	-	59
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Es Sadda to Es Subagh

Lumpsum	0.2	0.55	0.25	-	1	98.182,0	20	54	25	-	98
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Subtotal

20	113	25	-	157
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c. Structures - culverts - routine

Arab 6 Village to Es Sadda (a) /e

Lumpsum	0.25	0.45	0.3	-	1	660.000,0	165	297	198	-	660
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Arab 6 village to Es Sadda (b) /f

Lumpsum	-	1	-	-	1	360.000,0	-	360	-	-	360
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Es Sadda to Es Subagh

Lumpsum	0.2	0.45	0.35	-	1	600.000,0	120	270	210	-	600
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Subtotal

285	927	408	-	1 620
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d. Structures - Special

Bridge at El Saada

Lumpsum	0.25	0.45	0.3	-	1	330.000,0	83	149	99	-	330
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Wash at #16 - 15 metres wide

Lumpsum	1	-	-	-	1	18.000,0	18	-	-	-	18
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Wash at # 52 - 30 metres wide

Lumpsum	1	-	-	-	1	72.000,0	72	-	-	-	72
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Wash at #56 - 25 metres wide

Lumpsum	1	-	-	-	1	45.000,0	45	-	-	-	45
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Subtotal

218	149	99	-	465
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Subtotal

756	4 200	1 538	-	6 494
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2. Es Subagh to Husheib

Formation of road

Lumpsum	0.2	0.5	0.3	-	1	1.756.566,0	351	878	527	-	1 757
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Grading of road and drainage /g

Lumpsum	0.2	0.5	0.3	-	1	147.273,0	29	74	44	-	147
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Structures - culverts - routine

Lumpsum	0.25	0.45	0.3	-	1	900.000,0	225	405	270	-	900
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Structures special

Lumpsum	0.3	0.7	-	-	1	216.000,0	65	151	-	-	216
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Subtotal

671	1 508	841	-	3 020
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Subtotal

1 427	5 708	2 379	-	9 514
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Detailed Costs

(US\$)

(US\$)

	Unit	Quantities					Unit Cost	Base Cost ('000)				
		2010	2011	2012	2013	Total		2010	2011	2012	2013	Total
B. Conservation and Water Control Works /h												
Arab 6 to Es Subagh	Lumpsum	-	0.7	0.3	-	1	350.000,0	-	245	105	-	350
Es Soubagh to Husheib	Lumpsum	-	0.7	0.3	-	1	330.000,0	-	231	99	-	330
Subtotal								-	476	204	-	680
C. Studies												
1. Studies												
To support field activities for roads /i	Per annum	0.6	0.25	-	-	0.85	295.000,0	177	74	-	-	251
Total Investment Costs								1 604	6 258	2 583	-	10 444
Table 1. Physical Rehabilitation and Construction of Rural Roads												
II. Recurrent Costs												
A. Road Maintenance												
Road maintenance /j	Lumpsum							-	71	95	95	262
Total Recurrent Costs								-	71	95	95	262
Total								1 604	6 329	2 678	95	10 706

\a Road Category d.3 see working paper 1

\b Road Category e.2 see working paper 1

\c For unsurfaced %

\d Road Category e.2 see working paper 2

\e Road Category d.3 see working paper 1

\f Road Category e.2 see working paper 1

\g For unsurfaced %

\h All catchments draining towards road structures will be treated using soil & water conservation measures

This is an income generating activity for the community

\i Provision of detailed studies

Yr. 1 includes retroactive financing for survey and design and pre-qualification of contractors and consultancy firms

\j Routine maintenance estimated at 1%% of road development from Yr 2

Component 2 Detailed Cost Table 2

**Table 2. Capacity Building and Institutional Development
Detailed Costs**
(US\$)

S\$)

		Quantities						Base Cost ('000)				
	Unit	2010	2011	2012	2013	Total	Unit Cost	2010	2011	2012	2013	Total
Investment Costs												
A. Civil Works Road Office												
Rehabilitation of Roads and Works Building /a	number	1	-	-	-	1	50.000,0	50	-	-	-	50
B. Vehicles and Equipment Roads and Bridges												
Office equipment /b	Lumpsum	1	-	-	-	1	110.500,0	111	-	-	-	111
4 WD double cabin pick-up /c	number	4	-	-	-	4	36.000,0	144	-	-	-	144
Subtotal								255	-	-	-	255
C. Training, Technical Assistance and Studies												
1. Technical Assistance												
a. Contracted Services /d												
Team Leader /e	Per annum	0.33	0.47	0.2	-	1	572.000,0	189	269	114	-	572
Local Consulting Core Team /f	Per annum	0.35	0.37	0.27	0.01	1	262.600,0	92	97	71	3	263
Subtotal								281	366	185	3	835
b. Government Support Staff /g												
Top up salaries and allowances	Per annum	0.25	0.25	0.25	0.25	1	452.000,0	113	113	113	113	452
Subtotal								394	479	298	116	1 287
2. Training												
a. Training Material												
Preparation/Revision of Training Modules Roads	Lumpsum	0.67	-	-	0.33	1	20.000,0	13	-	-	7	20
Preparation/Revision of Training Modules SWC	Lumpsum	0.34	0.66	-	-	1	20.000,0	7	13	-	-	20
Subtotal								20	13	-	7	40
b. Training for the Rural Roads /h												
English Language /i	number	1	1	-	-	2	6.400,0	6	6	-	-	13
CAD and use of specialized software /j	number	1	1	-	-	2	4.260,0	4	4	-	-	9
Surveying /k	number	1	1	-	-	2	6.400,0	6	6	-	-	13
Construction Management and Supervision /l	number	1	1	-	-	2	6.400,0	6	6	-	-	13
Specifications and Procurement /m	number	-	1	1	-	2	6.400,0	-	6	6	-	13
Road design /n	number	1	1	-	-	2	6.400,0	6	6	-	-	13
Planning and Implementation of road maintenance /o	number	-	1	1	-	2	6.400,0	-	6	6	-	13
Subtotal								30	43	13	-	85

**Table 2. Capacity Building and Institutional Development
Detailed Costs**
(US\$)

	Unit	Quantities					Unit Cost	Base Cost ('000)				
		2010	2011	2012	2013	Total		2010	2011	2012	2013	Total
c. Training - Conservation and Water												
Training of trainers /p	number	1	1	-	-	2	8.500,0	9	9	-	-	17
Conservation measures and water control structures /q	number	1	1	-	-	2	7.000,0	7	7	-	-	14
Implementation of labour based works TOT	number	1	1	-	-	2	7.000,0	7	7	-	-	14
Training of locality staff and CBOs	number	1	1	-	-	2	7.000,0	7	7	-	-	14
Community training	number	1	1	1	-	3	7.000,0	7	7	7	-	21
Subtotal								37	37	7	-	80
d. Workshops, Seminars, exchange in-country												
National/Regional workshops and seminars	Lumpsum							-	10	-	10	20
Stakeholders workshops/seminars	Lumpsum							5	5	5	5	20
Inter-site community visits	Lumpsum							5	5	5	5	20
Study tours in-country	Lumpsum							5	5	5	-	15
Subtotal								15	25	15	20	75
e. Overseas training												
Short course in Road planning, design & construction /r	number	-	1	2	-	3	15.000,0	-	15	30	-	45
Subtotal								102	132	65	27	325
Subtotal								495	611	363	142	1 612
Total Investment Costs								800	611	363	142	1 916
II. Recurrent Costs												
A. Allowances												
Field Allowances Senior Officials /s	Person days	360	360	360	360	1 440	10,0	4	4	4	4	14
Field allowances other staff /t	Person days	4 680	4 680	4 680	4 680	18 720	8,0	37	37	37	37	150
Subtotal								41	41	41	41	164
B. Operational Costs												
Vehicle operation and maintenance /u	Lumpsum							36	36	36	36	144
Equipment maintenance /v	Lumpsum							6	6	6	6	22
Subtotal								42	42	42	42	166
Total Recurrent Costs								83	83	83	83	330
Total								882	694	446	225	2 247

**Table 2. Capacity Building and Institutional Development
Detailed Costs**

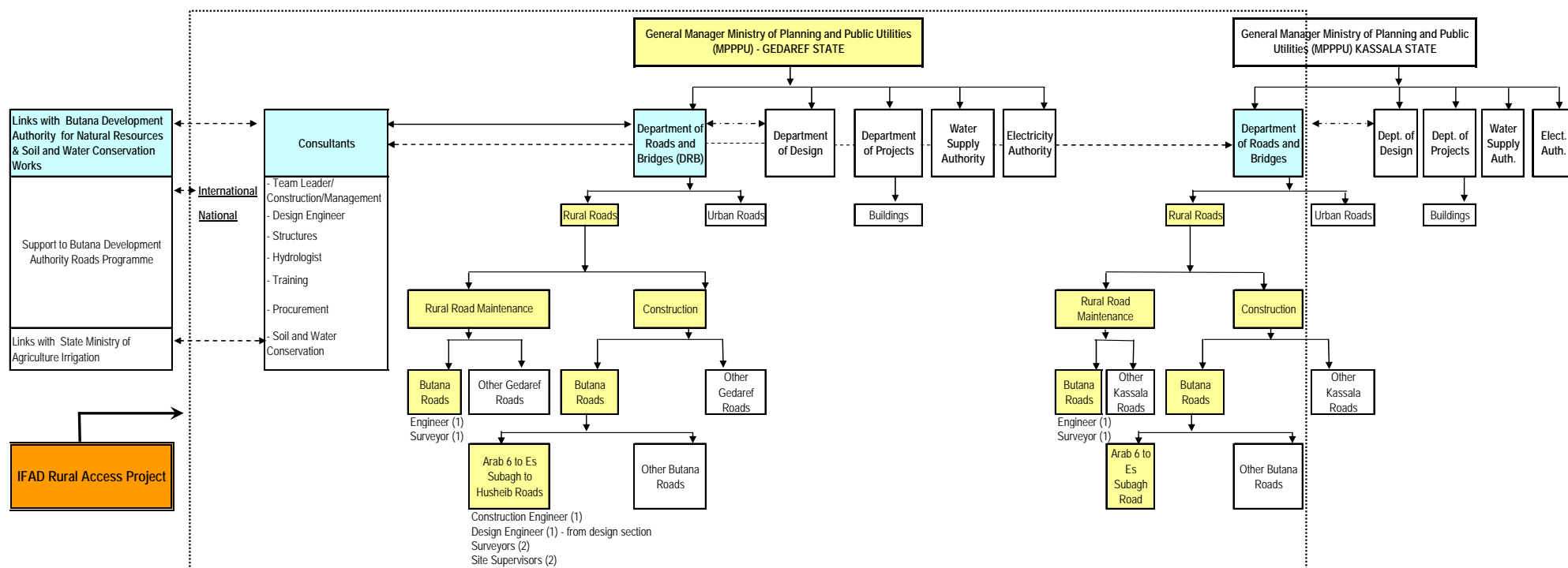
\a	Gedareff
\b	See working paper 1: Equipment to be provided to Department of Roads and Bridges \$71 000 Gedaref and \$39 500 New Halfa
\c	3 Gedaref and 1 New Halfa
\d	30% overhead provided for in annual costs of consultants - both International and National
\e	2.5 year input based in Gedaref as part of core consulting team
\f	Core team based in Gedaref see Calculation Tables - Full time Deputy Team Leader with other short term inputs from various specialists
\g	See working paper 1: Department of Roads and Bridges; Road Maintenance units Gedaref and New Halfa BDA Soil and Water Conservation Butana and Artbara
\h	Includes training for contractors
\i	6 days for 15 people in Gedariff
\j	6 days for 10 people
\k	6 days for 15 people in Gedariff
\l	6 days for 15 people in Gedariff
\m	6 days for 15 people in Gedariff
\n	6 days for 15 people in Gedariff
\o	6 days for 15 people in Gedariff
\p	Gedariff 6 days x 20 persons
\q	15 persons x 6 days - includes cost of transportation from Gedariff of 1 vehicle
\r	3 month courses
\s	4 senior management at 10 days per month x 9 months
\t	26 days x 20 persons x 9 months - includes allowances for field staff and drivers
\u	25% of capital cost
\v	5 % of capital cost

Detailed Cost Table 3: Component 3

**Table 3. Project Management
Detailed Costs**
(US\$)

(US\$)		Quantities					Base Cost ('000)					
	Unit	2010	2011	2012	2013	Total	Unit Cost	2010	2011	2012	2013	Total
I. Investment Costs												
A. Technical Assistance												
1. Monitoring and Evaluation												
CCU Contract	Per annum							-	15	10	5	30
Road and traffic survey	Study	1	-	1	-	2	15.000,0	15	-	15	-	30
Annual assessment	assessment	1	1	1	1	4	10.000,0	10	10	10	10	40
Planning workshops	event	1	1	1	1	4	5.000,0	5	5	5	5	20
Audit	Per annum							5	5	5	5	20
Mid-term Review	Lumpsum							-	20	-	-	20
Project Completion Report	Lumpsum							-	-	-	10	10
Subtotal								35	55	45	35	170
2. Monitoring by NHBA												
Monitoring Missions	missions	3	3	3	3	12	5.000,0	15	15	15	15	60
Subtotal								50	70	60	50	230
B. Contracted Staff BDA												
BDA staff overtime	Per annum							30	30	25	25	110
Total Investment Costs								80	100	85	75	340
II. Recurrent Costs												
A. Operational Costs												
Equipment maintenance	Per annum							15	15	15	15	60
Total Recurrent Costs								15	15	15	15	60
Total								95	115	100	90	400

ANNEX IV: ORGANIZATIONAL ORGANIGRAMME



Notes:

- Support to Roads and Bridges at Locality level is handled centrally by the State Roads and Bridges Department
- At Locality level Water, Buildings, Electricity and Mechanical sections are all combined into one unit.
- In Gedaref State, full support is being provided to DRB as most of the rural roads in Butana are in Gedaref State and also the DRB will be assisting and working with BRDP on their rural roads programme

ANNEX VI: RESULTS-BASED M&E

Introduction

1. This annex on Monitoring and Evaluation aims to provide an overall framework for the implementation of the project monitoring. The M&E will be based on the principles of monitoring the project results and impact. Project monitoring would form an integral part of the project management system and would focus on project performance in terms of the inputs and outputs, as well as project results in terms of impact and sustainability.

Implementation of the M&E

2. The BDA M&E Officer will be in charge of monitoring the RAP implementation. The M&E system will be in line with the requirements of IFAD Results and Impact Management System (RIMS) and the 1st and 2nd level indicators will be aligned to the extent possible. Unfortunately, it is worth mentioning that in the RIMS, the performance of rural transport and travel activities funded by IFAD are recorded only through the traditional single quantitative indicators mostly limited to the number of kilometers of roads constructed or improved. Additional indicators will be included to monitor the outcomes of the project in terms of quality, effectiveness and sustainability.

3. **Result and Impact Management System (RIMS):** IFAD has established a sample reporting format to report on the 1st and 2nd level indicators associated with RIMS which will be part of the project periodic reporting. First-level results correspond to the project activities. A sample reporting format for reporting on first-level indicators is given in appendix 2. Second-level results will look at the short and medium term changes (outcomes) caused by the implementation of the project activities and outputs, and third level result will look at the long term effects of the project. The second-level results are reported after mid-term review and are updated on an annual basis. In recognition of IFAD's commitment to the Millennium Development Goals (MDGs), the RIMS framework normally includes two mandatory impact indicators: child malnutrition and household assets. The period covered should be the same as in the AWP&B.

4. **Lessons learnt on project M&E.** Lessons learnt from closed and ongoing projects in Sudan can be summarized as follows:

- Cross-cutting and thematic surveys/studies, especially those carried out in collaboration with universities, have been a cost-effective and practical way to fill M&E information gaps and should be replicated in the ongoing and future projects;
- The projects do not make effective use of the participatory M&E arrangements with respect to data collection and reporting. Ongoing monitoring should be delegated to the beneficiaries as part of a participatory M&E during the training of community organizations. To that effect, a data base of the project beneficiaries should be established to facilitate ongoing monitoring and impact studies. The community development committees would provide the required inputs for the data base.
- It was noted that the project M&E systems lack standardized formats/forms for data collection and reporting; Moreover, there is a top heavy organizational structure and unclear accountability for M&E; and the implementation of the M&E system components is slow. It is therefore proposed that start-up activities and the first year supervision allocate attention to the set-up of the M&E system.
- The financial monitoring sub-system is not linked with the physical monitoring system at the output level. This deficiency should be resolved by ensuring that inputs recorded in the system are linked to output reporting so as to allow the project management to track project efficiency.

5. Based on the lessons learned stated above, the RAP M&E system will be geared to entrusting data collection, reporting and analysis to the road committees at village level, the BDA Development Team at locality level, the Roads Department of the MPPPU. The M&E officer in the

BDA will play the role of backstopping to these entities and will make ensure that the M&E for both RAP and BIRD are harmonized and consistent.

Input Monitoring

6. Key M&E activities will comprise the Project Implementation Manual, the baseline survey at start-up stage, the AWPB, half-yearly data collection and reporting of activity and output targets and achievements; annual impact assessment and evaluation, a mid-term review, and a Project completion report. The activities will be guided by a number of fundamental considerations:

- (a) Data will be disaggregated by gender and youth, when applicable.
- (b) Each implementing or partner agency will have clear M&E responsibilities with specific reporting deadlines and a forum for presenting and discussing the findings of the monitoring exercise.
- (c) M&E will be linked to the project rationale, log frame, annual work plans and budgets and the beneficiary assessments. The findings of the M&E will be used to take corrective or enhancing measures at the level of project management.

7. In the case of the roads, the choice of results-based monitoring and evaluation indicators should be very objective. There are two levels of monitoring and evaluation. There is on one hand the immediate monitoring for efficient management of the road construction and on the other hand the monitoring of the project performance and implementation progress. **Indicators for efficient management** would concentrate on the quality of material and structures, on the length of road completed according to specifications, on the time spent and the remaining period for completion of works, the number and quality of the machinery on site, the number of teams working on the road, the availability of material on site, the number and proficiency of the engineers in charge of the teams and the quality of the camping facilities of the contractor as well as the welfare of the task workforce. This will be reported upon by the BDA technical team in charge of the supervision of road works.

8. **Indicators for performance monitoring.** These indicators measure the extent the project results and objectives are achieved. The socio-economic survey completed in July 2009 enabled the design completion mission to set the performance benchmarks and targets as follows:

Indicators	Baseline	Target by project completion
Increased producers' marketing margin	SDG 16/ sheep – gross margin in rainy season	SDG 45/ sheep – gross margin in rainy season
Increase in number of women trading in the markets served by rural feeder roads.	Approx 260 women ⁶	1700 women
Number of producers benefiting from improved market access; (RIMS).	12 000 producers trade in town markets ⁷	15 000 producers
Increase in sale prices for livestock in rainy season	SDG 130 to 175/ small ruminant in Es Soubagh and Rattaja (accessible markets)	SDG 150 to 220 / small ruminant in Gadaref and Tamboul markets(thanks to better access)
Decrease in transportation time in rainy season	2 days at Es Sadda crossing	1 hour at Es Sadda crossing
Decrease in transportation tariff in rainy season	10 to 20 SDG/ trip Es Soubagh-New Halfa	8 SDG/ trip Es Soubagh-New Halfa
Increase in road traffic (number and type of vehicles) in rainy season (July-Sep).	140 vehicles on the Es Soubagh – Es Sadda road 50 vehicles on the Es Soubagh – Husheib road	20% increase in traffic during rainy season on both alignments
Community road fund annual disbursements	Not existing	USD 95 000 to cover 100% of maintenance costs
Infrastructure development plans exist at state	Not existing	Rural roads plan available

⁶ The figure is derived from 4 women traders by village for 26 villages, and approx 150 women in Es Soubagh market in rainy season and 10 women in the Arab 6.

⁷ This is an extrapolation of the result obtained in the CCI study of 2006 whereby 78% of communities in Butana sell their produce and buy their household needs at town markets.

level.		
State budget allocation for infrastructure based on the development plan.	Ad hoc	Budgetary allocation in line with plan
Spot improvement approach mainstreamed in the ARP	Technical specifications for gravel and paved roads	Technical specifications for spot improvement adopted
Capacity building of MPPUs mainstreamed in ARP	No training allocation in ARP for the MPPUs	Training budget provided to MPPUs.
Community Road Fund expanded to other rural road networks in Kassala and Gadaref.	None in existence	Geographic scope of the CRF expanded to new localities

9. **Participatory Monitoring and Evaluation.** The project will establish procedures to enable the communities to participate in the planning and maintenance of the rural roads and to provide feedback from the project beneficiaries on the relevance and effectiveness of the project activities. The BDA will organize – through the locality development teams - this participatory assessment on an annual basis, as part of the review of the annual achievements of the community development plans and of the planning for the following year. The results of this participatory M&E will inform the planning and organization of the road maintenance works.

Management Information System (MIS)

10. A strong project management information system (MIS) is required to keep records and capture physical progress made by the project. It will be developed to incorporate the monitoring requirements and integrate data collected.

11. The above mentioned 2nd level indicators will be measured as a result of traffic and road surveys.

12. The management information system (MIS) developed for the RAP will allow generating the following reports:

- Annual work plan and budgets (AWPBs), where the establishment of performance benchmarks relies on AWPB targets. The AWPB for the RAP will indicate the areas of synchronization and synergy with the BIRDP;
- Six-monthly physical progress reporting, against output targets. The progress report will also indicate how the implementation of the RAP is actually synchronised with the marketing activities of BIRDP.
- Six-monthly financial reporting against expenditure forecasts and regular financial statements by the BDA.;
- RIMS year-end report.

Impact Evaluation

13. In conformity with the RIMS requirements, the design of the evaluation system will focus on analysing the impact of the improved road accessibility on the wellbeing and living standards of the poor, in line with the MDG objectives, and is based on both quantitative and qualitative information. Particular emphasis will be given to assessing the impact of the project on women. The evaluation design will cover the key anchor indicators established under the RIMS system for all projects, namely:

- Number of households with improvements in households assets ownership index;
- Reduction in prevalence of child malnutrition under 5

14. **Evaluation** of the project's impact will comprise among other things:

- RIMS Survey
- Baseline Survey.

- Mid-term review.
- Project Completion Report (PCR).

15. **Baseline Studies:** The scope of work of the RAP baseline study needs to take into consideration the scope of work for the BIRDAP baseline study which covers production and marketing issues. Based on data currently available from the socio-economic survey completed in July 2009 for the RAP design completion mission, data on the following indicators is required as they are deemed necessary to establish the reference levels for the investments planned in terms of rural access roads:

- the level of accessibility in the project area such as the measurement of road density in terms of population (km/ 1,000 people) or land area (km/1,000 km²).
- the travel time on existing road network.
- the % of road network in good and fair condition.
- the vehicle operating costs in the dry and rainy season.
- the present crop and livestock production around each road link, particularly with regards crop and dairy production (livestock production and sale was already included in the socio-economic survey).

16. A consultancy firm with experience in this domain will be recruited to carry out the traffic survey as well as the socio-economic and anthropometric survey, at baseline, mid-term and completion of the project. As the baseline and anthropometric surveys have not yet started for BIRDAP, it is proposed that the scope of work of the BIRDAP baseline study be adjusted to incorporate the indicators mentioned above. The results of the baseline survey will need to be disaggregated by geographic area so that baseline information is provided for the RAP project area.

17. **Mid-term review.** The mid-term review is scheduled at the end of the second year of project implementation, at which time the construction of the rural road should be nearly completed. The mid-term review will assess project effectiveness and efficiency, synergy and synchronization with BIRDAP, and whether the project has achieved the milestones for sustainability. The MTR will carry out a comparative analysis of the conventional and spot improvement approaches to road construction. The results of the mid-term review will be used to guide decisions about project continuation and about adjustments to implementation in order to increase project effectiveness and sustainability.

18. **Project completion report.** The BDA will prepare a project completion report to be submitted by the project completion date. The project completion report will rely on 3 studies, the RIMS survey, the traffic survey and the project impact study, to assess project effectiveness and sustainability as well as its replicability. These socio-economic surveys should give special attention to poverty status of targeted communities and they should also examine the effectiveness of the road committees, the community road fund (CRF) and the role of women in these social structures. The project innovation with regards the community road fund will be documented in terms of the procedures followed, the results achieved and the lessons learned, as well as its replication to new road alignments within the two states or within other states. The project completion report will also have a dedicated section to the comparative analysis between the conventional and spot improvement approach to road construction and the replicability of the spot improvement approach.

19. The socio-economic surveys and the statistical data should be used for comparative analysis of the before and after road construction. Reporting should be very regular in timing and care should be taken to compare the status of households (same households, if possible) with and without road improvements.

M&E Organization and Staffing

20. **Organization.** The M&E system of the RAP will have 3 main levels as follows:

The community level,

- The road committees will be responsible for community participation in the supervision of design works, supervision of maintenance works and implementation of maintenance works as well as raising the awareness of

community members about payments of road tolls and market fees. The road committees will be responsible for the collection of community specific data particularly with regards the training and labor days for soil and water conservation and maintenance works and submission of this data to the BDA development team based at locality level.

The locality level,

- The 2 locality based BDA development teams that cover Butana and River Atbara localities are a multi-disciplinary team responsible for community mobilization, organization, training in natural resources management, agriculture, soil and water conservation, livestock husbandry and veterinary care as well as other productive skills. The development teams will be responsible for consolidating the data from the road committees, monitoring higher level indicators related to the project outcomes. The development team will submit their monitoring reports to the M&E officer of the BDA.
- The localities will report on the share of proceeds from the road tolls and market fees paid to the CRF.

The state level,

- The 2 Road Department of the MPPPUs in Gadaref and Kassala States will be responsible for monitoring and reporting on the physical progress of the road and on the activities and results under the capacity building activities. The Road Departments will submit their reports to the M&E Officer of the BDA through the Director Generals of the MPPPUs.
- The M&E Officer of the BDA will be responsible for setting up the data collection/ analysis/ reporting system at community, locality and state levels and ensuring that the teams at all levels are well trained to carry out project monitoring. The M&E Officer of the BDA will be responsible for monitoring the impact achievement of the project as well as its replication potential.

21. **Staffing.** The road committee will assign one of its members to report on the activities of the road committee and on the benefits accruing to the communities from road upgrading. The development team will assign the community development officer to collect the required data and prepare the progress report accordingly. The locality will assign its finance manager to report on proceeds from road tolls and market fees and the share paid to the CRF. The Directors of the road Departments will be responsible for compiling the data and reporting on the progress of the rural road construction and on the progress in training their staff. The Senior M&E Officer and his/ her assistant in the BDA will be responsible for setting up the RAP M&E system, training the various partners on their roles and reporting duties, and conducting the impact assessments with the assistance of consultancy firms namely for carrying out the traffic survey.

22. **Budget.** Budget provisions were made for the baseline survey, annual assessments, periodic traffic surveys, the mid term review and the completion assessment. The monitoring missions carried out by the NHBA were also budgeted.

23. **Planning.** The development of the annual work plan and budget of the RAP will be a collaborative endeavour involving the M&E officers of the BDA, the Directors of the Road Department of the MPPPUs in Kassala and Gadaref and the localities. The annual work plan will specify the length of roads to be improved and maintained, the mobilization of maintenance funds in the CRF and the training efforts required during the year. The AWPB will be submitted to the BDA Board of Directors for endorsement then submitted to IFAD for no objection. The AWPB will address shortcomings and build on achievements reported by the project M&E.

APPENDIX 1: Draft Matrix for Results Monitoring and Evaluation

Impact Indicators	Baseline	Data Collection and Reporting						
		PY 1	PY 2	PY 3	PY 4	Frequency and Reports	Data Collection	Responsibility for data collection
Reduction in the prevalence of malnutrition in children under 5	TBD RIMS survey					Project Completion Report to be prepared in year 4	Anthropometric Survey	BDA
No. of households with improvement in household asset index	TBD RIMS survey				15 000	As above	Household asset index questionnaire	BDA
Increase of rural incomes from 500_ / capita to USD 800/ capita	TBD BIRDP baseline survey				800	As above	Impact survey	BDA

Outcome Indicators	Baseline	Data Collection and Reporting						
		PY 1	PY 2	PY 3	PY 4	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Increased producers' gross margins from livestock and dairy sale in rainy season	16 SDG/ head of sheep (to be confirmed by BIRDP baseline)		X		45	Project progress reports, MTR and PCR	Annual assessment	BDA Development team
Increased number of women trading in markets	approx 260 women				1700	Project progress reports, MTR and PCR	Annual assessment	BDA Development Team
Number of km improved	MPPPU physical survey	20	90	34		Project progress reports, MTR and PCR	Annual assessments	Road Dept of MPPPU
Number of producers benefiting from improved market access	TBD BIRDP baseline				15000	Project progress reports, MTR and PCR	Annual assessment	BDA Development team and road committees

Outcome Indicators	Baseline	Data Collection and Reporting						
		PY 1	PY 2	PY 3	PY 4	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Increase in sale price of livestock in rainy season	130-175/head, small ruminant				150-220	Project progress reports, MTR and PCR	Annual assessment	BDA Development team and road committee
Decrease in transport time and tariff in rainy season	2 days at Es Sadda				1 hour	Project progress reports, MTR and PCR	Annual assessment	BDA Development team and road committee
Increase in road traffic	140 vehicles on the Es Soubagh – Es Sadda road 50 vehicles on the Es Soubagh – Husheib road				20% increase	PCR	Traffic survey	BDA – M&E Officer
Number of km maintained	None		20	110	144	Project progress reports, MTR and PCR	Annual assessment	CRF and Road Dept of MPPPU
Community Road Fund established and disbursing (in '000 USD)	NA		71	95	95	Project progress reports, MTR and PCR	Financial statements and audit reports	CRF
CRF expanded to other rural road networks in Kassala and Gadaref	NA				One more established	Project progress reports, MTR and PCR	Annual assessment	BDA – M&E officer
Number of labour days by gender and poverty group	Nil	10 000 total aggregate by project end 50% women, and 50% less than 30 years				Project progress reports, MTR and PCR	Annual assessment	Road committees and BDA development teams
Infrastructure development plan exists at state level and budgetary allocation aligned with the plan	NA			1		Project progress reports, MTR and PCR	Annual assessment	Road Dept of MPPPU

Outcome Indicators	Baseline	Data Collection and Reporting						
		PY 1	PY 2	PY 3	PY 4	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Spot improvement approach replicated	NA		Positive evaluation		at least 200 Km	Project progress reports, MTR and PCR	Annual assessment	Road Dept of MPPPU BDA – M&E Officer

Activity Indicators for Each Component	Baseline	PY 1	PY 2	PY 3	PY 4	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Component 1								
Number of km constructed/rehabilitated	Desin works	20	90	34		Progress reports, MTR, PCR	Annual assessment	Road Dept of MPPPU
Number of conservation and water control works	Design works	To be determined				Progress reports, MTR, PCR	Annual assessment	Road committees BDA Development team
Component 2								
Number of road committees trained		7	14			Progress reports, MTR, PCR	Annual assessment	BDA Development team
Number of committees with women in leadership position		7	14			Progress reports, MTR, PCR	Annual assessment	BDA Development team
Number of members of road committees by gender		To be assessed annually				Progress reports, MTR, PCR	Annual assessment	Road committees
Number of community members trained by gender		400 by project end, 50% women and 50% below 30 years				Progress reports, MTR, PCR	Annual assessment	Road committees
Number of contracts established with community groups	NA		To be assessed annually			Progress reports, MTR, PCR	Annual assessment	CRF
Number of vehicles procured		4				Progress reports, MTR, PCR	Annual assessment	Road Dept of MPPPU
Number of offices rehabilitated and equipped		2				Progress reports, MTR, PCR	Annual assessment	Road Dept of MPPPU
Number of government staff deployed and trained		16	16	16	16	Progress reports, MTR, PCR	Annual assessment	Road Dept of MPPPU
Component 3								
Number of NHBA monitoring visits		3	3	3	3	Progress reports, MTR, PCR	Annual assessment	BDA – M&E Officer

Marketing activities under BIRD synchronized with RAP		Markets rehabilitat ed and Market info system establishe d			Progress reports, MTR, PCR	Annual assessment	BDA – M&E Officer
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APPENDIX 2: RIMS FORM

FIRST LEVEL RESULTS								
Results			Unit	Period ending	31-Mar	Cumulative		
				AWP&B	Actual	% of AWPB	Appraisal	Actual % of Appraisal
Total Outreach	Households receiving project services		Number			#DIV/0!	15 000	0%
	People receiving project services		Male			#DIV/0!	TBD	#VALUE!
	People receiving project services		Female			#DIV/0!	TBD	#VALUE!
Component	Sub Component							
Component Name	Sub Component Name							
1. Rural roads	Rural Roads Committees	Roads constructed	KM			#DIV/0!	153	0%
		Groups managing infrastructure formed/strengthened	Number			#DIV/0!		#DIV/0!
		Groups managing infrastructure with women in leadership position	Number			#DIV/0!		#DIV/0!
2. Capacity Building		People in groups managing infrastructure formed/strengthened	Male			#DIV/0!		#DIV/0!
		People in groups managing infrastructure formed/strengthened	Female			#DIV/0!		#DIV/0!
						#DIV/0!		#DIV/0!
3. Project Management		Government officials and staff trained				#DIV/0!		#DIV/0!
		People trained in infrastructure management				#DIV/0!		#DIV/0!
		Staff of service providers trained				#DIV/0!		#DIV/0!
						#DIV/0!		#DIV/0!

FIRST LEVEL RESULTS								
Results			Unit	Period ending AWP&B	31-Mar Actual	% of AWPB	Cumulative	
							Appraisal	Actual % of Appraisal
Total Outreach			Households receiving project services	Number		#DIV/0!	15 000	0%
			People receiving project services	Male		#DIV/0!	TBD	#VALUE!
			People receiving project services	Female		#DIV/0!	TBD	#VALUE!
Component	Sub Component							
Component Name	Sub Component Name							
1. Rural roads	Roads constructed		KM			#DIV/0!	153	0%
2. Capacity Building	Rural Roads Committees	Groups managing infrastructure formed/strengthened	Number			#DIV/0!		#DIV/0!
		Groups managing infrastructure with women in leadership position	Number			#DIV/0!		#DIV/0!
		People in groups managing infrastructure formed/strengthened	Male			#DIV/0!		#DIV/0!
		People in groups managing infrastructure formed/strengthened	Female			#DIV/0!		#DIV/0!
3. Project Management	Government officials and staff trained					#DIV/0!		#DIV/0!
	People trained in infrastructure management					#DIV/0!		#DIV/0!

ANNEX VII: COMMUNITY ROAD FUND: THE OPERATING MODEL

I. Introduction

1. The RAP mission reviewed the performance of the rural and agricultural road sector. Whereas the maintenance of the national road system is the responsibility of the National Highway and Bridges Authority (NHBA), the responsibility for the maintenance of the rural and agricultural road system lies with the State and locality governments. Indeed historically the opening of roads after the end of the rainy season was the responsibility of the localities, although the financial allocations were normally transferred from the national budget. Localities were allowed to collect local taxes, especially from agricultural produce (known as Gibana and Ushur) though there were no road tolls per se. Over time this responsibility was completely eroded and in most cases localities rarely give priority to the maintenance activity during or after the rainy season. The localities especially in the heavy savannah and black cotton zone (these soils correspond to those found in the RAP project area) used to own heavy road machinery for spot repair and grading of roads. Only very recently did the State of Gadaref arrange for the procurement of a limited number of road equipment and machinery for this task. Kassala State depends primarily on heavy machinery under the control of the Ministry of Irrigation and Water Resources and the Gash Agricultural Scheme.

2. Currently the Ministries of Physical Planning and Public Utilities (MPPPU) are in principle responsible for both construction and maintenance of all state roads, whether rural, agricultural or intercity roads. The general strategy of these ministries is to construct roads with higher standards, essentially paved tarmac roads; to reduce the immediate and the future cost of maintenance of roads and to meet the high political demand for paved roads. In reality, much of the roads were found to be substandard because of the lack of expertise in road specifications, low quality of construction of structures, lack of monitoring and supervision.

3. Under these conditions the RAP design completion mission concluded that new arrangements need to be sought for the maintenance of the rural roads. In developing these new arrangements, the design mission was guided by the existing set up for the management and maintenance of water facilities in Butana. Indeed, the communities in Butana have experience with the management and maintenance of drinking water facilities and historically these communities operated a sophisticated system whereby the use of range resources was regulated through investments in water points.

4. The main elements of the management and maintenance of water facilities that can be of use to the road maintenance are: fees are set based on users' willingness to pay and on the opportunity cost of the service; the levy of fees is under the management of the communities; there is a clear division of roles between the communities and the localities; the communities pay the localities a share of proceeds in exchange of which the locality carries out the large repair works.

5. The maintenance arrangements proposed in this annex were developed jointly with the locality executive staff and in consultation with the communities, vehicle operators and market agents. The design completion mission is proposing here a process that can be fine tuned based on the level of the locality and community participation.

II. Conceptual Framework

6. **Financing maintenance works.** The main sources of financing for the maintenance will be the road tolls with toll stations established in strategic locations along the improved road, and market fees levied from the main markets serviced by the road i.e. Um Al Gora, New Halfa, Es Soubagh, Gadaref, and Tamboul.

7. The socio-economic survey completed in July 2009 ran scenarios for the levy of road tolls and market fees and concluded that the proceeds would largely cover the annual maintenance requirements of the road estimated at USD 95 000 or SDG 238 000 at full completion of the road. The results of the simulations are as follows:

Table 1: Total Expected Revenue for Maintenance, in SDG

Years	Revenue from toll stations	Revenue from vehicles at markets	Revenue from sale of livestock	Total
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	318360	150701.6	254769	723830.6
2014	397950	158236.7	267507	823694.1
2015	497438	166148.5	280883	944469.3
2016	512361	174455.9	294927	981743.9
2017	527732	183178.7	309673	1020584
2018	543564	192337.7	325157	1061059
2019	559870	201954.5	341415	1103239
2020	576666	212052.3	358486	1147204
2021	593967	222654.9	376410	1193032
2022	611785	233787.6	395230	1240803
2023	630138	245477	414992	1290607
2024	649043	257750.8	435741	1342535
2025	668515	270638.4	457529	1396682
2026	688570	284170.3	480405	1453145
2027	709227	298378.8	504425	1512031

8. The assumptions for these calculations are based on users' willingness to pay as well as the expected road traffic and livestock trade as follows:

- The suggested fees on transport vehicles are 7 SDG for heavy truck, 7 SDG for lorry, 6 SDG for minibus and 5 SDG for pickups.
- Collection of fees from animals sold at official markets. The recommended animal rates are 1 SDG for sheep and goats, 2 SDG for cattle, horse and donkey, 3 SDG for camel. This is over and above the animal sale tax already charged on animals sold in the market⁸.
- Collection of fees from all vehicles entering the markets at Es-Soubagh, Halfa and Um Al Gora. The suggested fee is 10 SDG for heavy truck, 7 SDG for lorry, 6 SDG for half-trucks and minibus and 5 SDG for pickups.
- Users of the road will only be willing to pay the fees once the road construction is completed and improved accessibility is satisfactory.
- Future Demand will increase by 5% per year. with the road. The base figures are 140 vehicles on Es Soubagh-Es Sadda road and 50 vehicles on the Es Soubagh–Husheib road.
- Future passenger movement will increase by 6% with the road.

⁸ There are two methods of animal sales tax collection: locality staff collect directly and deposit in the collection account. This method has a high cost and risk associated with its management and safety of funds. Secondly, the localities chose, through a competitive bidding process, a private contractor who pays a specific bid price, sometimes paid monthly on an advance basis. The contractor profit is any money above the contract price. This has less managerial worries and possibly less evasion, real or induced. Market information is very difficult to obtain in this system. Contractors will be reluctant to take responsibility for the collection of fees unless it is a pro-rata estimation on top of the contract price because they would not like to disclose data and information. Although the contract period is one or two years, contractors usually win the contract continuously, year after year.

- Agricultural productivity will increase by about 20% in the short term (1-2 years), 30% in the medium term (3-6 years) and 50% in the long term (>6 years) through improved access to markets.

9. On the basis of the assumptions and the simulations of the revenues earned from the road tolls and market fees, the costs of the periodic and routine maintenance would be largely covered through this financing mechanism. Furthermore, it would appear that the fees imposed on vehicles on the road and in the market will be the principal source of the revenues for maintenance. This preliminary calculation is useful in assessing the feasibility of a toll and fee system for the maintenance of the road. More detailed analysis is required to determine the toll system in more detail and it is suggested that IFAD recruits a specialist in this domain in 2010.

10. **Institutional set up.** The Community Road Fund (CRF) is designed as a mechanism to finance the preventative maintenance of the road. Schematically, it will be composed of an account replenished by the revenues from the road tolls and market fees and of a committee that will decide on how these revenues will be used for maintenance works. The committee will be established under the Butana Development Agency and will have the following scope of work:

- Involve state government, localities and communities in the maintenance of rural roads, an essential step for future sustainability;
- Establish practical modalities for financing routine and periodic road maintenance;
- Account for funds received for road maintenance;
- Plan on an annual basis the maintenance works required and contract these works to community based organizations through labor based contracts or to private contractors as applicable given the nature of the maintenance works;
- Promote communities and localities' awareness and compliance with the payment of road tolls and market fees.

10. The Community Road Fund will be composed of 4 main parties: the communities serviced by the road; the localities namely the Butana and River Atbara localities; the Road Departments of the MPPPU in Gadaref and Kassala; the Butana Development Agency. It is proposed that the Community Road Fund be chaired alternately by the Commissioners of the Butana and River Atbara localities or their designates. The Director and the Financial Manager of the BDA will act as secretary of the committee.

11. The roles of each party are clarified as follows:

- **The communities.** Village development committees active in the communities serviced by the road will establish road committees. The road committees will have the following responsibilities: (i) raising awareness about the importance of road maintenance and community contribution towards it; (ii) for communities where toll stations are located, they will certify the toll station receipts on a daily basis and report accordingly to the locality and the BDA; (iii) identify the road sites where maintenance works are required; (iv) supervise the maintenance works; (v) implementing labor based contracts for the maintenance of the road; (vi) monitor the number of labor days by gender and socio-economic group. It is worth noting here that village development committees are established in all the communities serviced by the road and are registered as legal entities under the voluntary association law.
- **The localities.** Localities are empowered to impose and levy fees by virtue of administrative decrees approved by the local councils. Their role will be primarily to: (i) issue administrative decrees to levy road tolls and market fees; (ii) staff the toll stations and monitor their performance; (iii) agree with the road committees on the certification of the receipts of the road tolls; (iv) transfer the proceeds of the road tolls and market fees to the CRF account held by the BDA.
- **The Road Departments of the MPPPU.** The Road Departments by virtue of their mandate are responsible for the maintenance of state roads. Their role will primarily consist in: (i) survey the road and identify sites requiring maintenance in consultation

with the road committees; (ii) plan the maintenance works and prepare bills of quantities and technical specifications accordingly; (iii) contract the maintenance works to communities or contractors based on the nature of works to be completed and decision of the CRF; (iv) supervise the maintenance works and train the road committees as needed.

- **The Butana Development Agency.** The main role of the BDA will be to: (i) hold the proceeds of the road tolls and market fees in a dedicated CRF account and report on the fund use on a regular basis to the road committees, localities, MPPUs and the BDA Board of Directors; (ii) disburse funds based on certified receipts of works completed to communities and contractors; (iii) monitor community participation and benefit from maintenance contracts, as well as community satisfaction with the road construction and maintenance.

12. **Definition of maintenance.** The term maintenance encompasses 3 main types of maintenance, routine maintenance, periodic maintenance and preventative maintenance. **Routine maintenance** comprises a range of small scale and simple activities usually carried out at least once a year but widely dispersed. Typical activities include roadside verge clearing and cutting back encroaching vegetation, cleaning of silted ditches and culverts, patching and pothole repair, and light grading/reshaping of unsealed surfaces. This type of maintenance is suitable for unskilled/skilled labour based methods supported by light equipment. **Periodic maintenance** occurs less frequently usually after one to two years of operation, depending on the type and quality of road. Works can include grading and reforming of longer lengths of road, regravelling, reshaping of drainage lines, bunds and erosion control works and repairs to structures. It will require both equipment and skilled resources/operators and also some activities similar to those under routine maintenance. Such works can be undertaken by unskilled and skilled labour based methods supported by light equipment. Road strengthening or reconstruction are normally not considered to be 'maintenance' and are often funded separately under 'development' or 'capital' budgets. **Preventative maintenance** is largely small scale water management. Water must be evacuated as quickly as possible from the road surface and around the base of embankments before it softens the surface and does irreversible damage to the road bed and foundation. This requires eliminating standing water by filling in of potholes and ruts on level ground as well as preventing the formation of lateral and longitudinal gullies where the destructive momentum of flowing water is particularly damaging. These works can also be undertaken by skilled and unskilled labor supported by light equipment.

III. Implementation modalities

13. There are four issues that are a prerequisite for the success of the CRF:

- A well conceived programme of community animation/mobilization and organization to ensure that users of the road readily pay the road tolls and market fees. The Gender and Community Development Officer and Development Teams of the BDA will run a very rigorous programme in this regard.
- The concerned localities namely Butana and River Atbara as well as New Halfa locality (where the New Halfa market is located) and the Central Gadaref locality (where the Gadaref livestock market is located) should come to an agreement whereby road tolls and market fees are levied with the purpose of financing the road maintenance but without overtaxing producers, market agents and vehicle operators.
- There should be a strict supervision on the staff collecting the road tolls to enforce discipline and transparency.⁹
- The soil and water conservation works should be implemented satisfactorily in order to ensure effective protection of the roads which in turn will help contain the maintenance costs.

14. **The awareness campaign.** The Gender and Community Development Officer of the BDA will organize the awareness raising campaign with regards the set up for the maintenance of the road and

⁹ The localities are known to be starving for funds and they may violate the agreement and attempt to retain more than that prescribed by the agreements

the role of the communities in this regard. The Gender and Community Development Officer and the BDA Development Teams will form in each community serviced by the road a road committee. The road committee will receive training on the management of labor based contracts for the implementation of maintenance works. The road committee would include at least 3 women members. Indeed, women are likely to benefit from the road in the rainy season and from the employment opportunities created by the maintenance works during the dry season. The awareness campaign will also target markets in order to sensitize traders, producers and vehicle operators on the importance of contributing to the maintenance of the road and on the maintenance arrangements adopted.

15. **Agreement between the localities.** The executive officers in the localities are aware of the risk of overtaxation of road and market users through the imposition of road tolls. They are also very aware of the risks of evasion. The executive officers and commissioners advanced the following proposals: if the vehicle operator pays the road toll at one of the 6 toll stations mentioned below, then he is exempted from payment at subsequent toll stations. The validity of this exemption (one day or more) is still to be worked out during the forthcoming mission to design the road toll system in 2010. With regards the levy of market fees, the fees should be harmonized and set in a way that does not increase the transaction costs for the producers. The contribution of each market to the maintenance of the road needs also to be worked out based on the estimated market throughput supplied from the Butana region (mainly livestock). The agreements will be developed based on experience and will need to make room for annual adjustments based on the monitoring of the maintenance works. The localities will pass the administrative decree for the levy of tolls and fees in 2010 in order for the decree to enter into full application in 2011 when maintenance works will be required on the road.

16. **Fee collection.** It is envisaged that there will be 6 stations where road tolls will be collected and 5 markets where market fees will be paid. The 6 stations include Arab 6, Es Sadda, Es Soubagh, Abu Gerad, Fuwal, and Husheib. Each of these stations will be manned by 2 persons working in shifts (12 hours/ day to start with) and employed by the locality. The 5 markets from which fees will be collected are Um Al Gora, New Halfa, Es Soubagh, Gadaref and Tamboul. The assumption is that the users will only be willing to pay for the maintenance of the road once the improvement of the road is fully completed. It is expected that the users will fully contribute to the road maintenance in project year 4. Prior to this date, the payments are likely to be partial and insufficient to cover the full maintenance costs warranting financial support from the project. Indeed, in the simulation of the CRF (table 1 above), no revenues are planned from 2010 to 2012, which corresponds to the period of road construction.

17. **Use of the proceeds.** The road tolls and market fees are seen by the localities as income to finance their recurrent costs and eventually their development costs. In order to avoid a situation whereby the locality is reluctant to transfer the proceeds to the CRF, a formula for sharing the proceeds needs to be worked out. Based on the simulations carried out in the socio-economic survey, the proceeds from road tolls and market fees can be shared in the following ratio: in case of road tolls, 70% of the road tolls will be paid to the CRF and 30% to the localities (to cover the cost of collection); in case of market fees, 100% of the incremental market fee – over and above the usual contract price for the market management - will be paid towards the CRF. These ratios will be reviewed and adjusted annually based on the collection performance. The CRF proceeds will be used exclusively to finance road maintenance works, through labor based contracts and private sector contracting; as well as remunerate the Road Department of the MPPPU for its supervision of the maintenance works.

18. **Soil and water conservation works.** The soil and water conservation works will consist in the construction of upslope cut-off/interceptor drains and diversion bunds, erosion control measures and structures and turnout and relief drains. Similarly, downstream slope control structures and checks will be needed along with vegetative measures to stabilise the gullies. These works will be undertaken by contract with the communities in the vicinity of the road improvements. The communities will be organised by road committees to implement the soil and water conservation works. Master trainers will be trained among selected community members to acquire the necessary competencies and transfer these skills to their peers. Members of the community will be hired as paid labour under the contracts for both construction and follow up annual maintenance works. The project will be providing training to these community members as trainers for the community and will also provide technical guidance, technical information and construction materials. This will include such

items as construction tools (hoes; wheel barrows; etc), construction materials such as gabion baskets and other materials for the check/slope control structures and the appropriate materials for vegetative stabilisation (indigenous materials must be utilised wherever possible).

19. **Labor based contracts for maintenance works and for the soil and water conservation works.** The information in this section is largely inspired by the ILO manual on community contracts in urban infrastructure works, dated 1998, and the on-going practice for community contracting as part of the construction of educational, health and water facilities.

- **The funder** will be the Butana Development Agency. The BDA will finance these contracts from the revenues of the CRF; and will report to the CRF, localities and its Board of Directors on the use of revenues and results of monitoring road construction and maintenance. The BDA will make the payments based on certified receipts of works completed issued by the Road Departments of the MPPPU.
- **The contracting authority** will be the localities of River Atbara and Butana depending on the location of the maintenance works. The Director General of the MPPPU will be the signatory of the contract.
- **The contractor** will be the road committee. The road committee will be a sub-committee under the already formed and registered community based organizations that exist at the level of the villages serviced by the road.
- **The technical service provider for the contract** will be the Road Department of the MPPPU. This department is responsible for the design of works and for the supervision of works included in the labor based contract.
- **Tendering of the works.** Works that fall within the boundaries of a community and that are determined by the Road Department as eligible for implementation through labour intensive modalities will be contracted out to the road committee in the given locality. This presumes that the Road Departments in the MPPPU in Gadaref and Kassala will establish a list of all maintenance works that are eligible for labour intensive implementation. Community members, both women and men, will be trained on the execution of such works.
- **Remuneration.** The level of remuneration will take into consideration the prevailing wage rates, the material benefits gained by the community from the implementation of these works (particularly in the case of soil and water conservation where the land can then be used for productive purposes), and an agreed profit margin (the acceptable norm is 10-15% for community contracting). The remuneration of the technical service provider can either be part of the community contract and deducted accordingly) or be paid separately by the BDA.
- **Payment schedule.** The payment schedule will include an advance. Payments will be made thereafter based on reaching specific milestones and as certified by the maintenance team of the Road Department of the concerned MPPPU. Payment requests will be submitted by the road committee to the locality and subsequently to the certification of the payment, the locality will authorize the BDA to pay the road committee.
- **Special clauses.** The contract will include special clauses about work safety and the non employment of children.
- **Graduation.** With the road committees that are achieving a satisfactory delivery of the labour based contracts, the localities will award labour and material contracts for the maintenance works for which local material is available. In case the labour and material contracts are satisfactorily completed, the road committees can be considered for applying to full contracts as part of local shopping procurement

modalities. This graduation process will be in line with the increased capacity of the road committees and the competency of the labour force it will mobilize.

- **Dispute resolution.** Disputes will be resolved amicably through the customary and local courts. If inconclusive, the case will be referred to the state court for arbitration.
- **Contract documentation.** The documentation of the contract will be adapted from the on-going contracts for the construction of education/ health and water facilities using community contracting. These contracts will be revised to include the description of labour intensive works, the supervision modalities, and the reporting requirements. A full set of contract documentation, progress reporting and certification of works will be developed by the Road Department of the MPPPU with support from the BDA technical team of road engineers.

20. **Audit of the CRF.** The CRF will be audited as part of the overall audit of the BDA. The audit findings will be submitted to the CRF and to the Board of Directors of the BDA for review and corrective actions to be implemented by the BDA management.

21. **Accountability framework.** In order to promote the accountability and transparency of the financing and implementation of the maintenance works, the BDA will issue as part of its progress report, a short report (2 pages) in Arabic detailing the CRF revenues, the use of funds, the audit findings and the results of project monitoring (focus will be on user satisfaction, time and costs saved, reduction in transport costs, increase of producer prices, and number of labor days generated). The information will also be disseminated through radio. Grievances and complaints will be reported to the localities and to the BDA development teams, who will then transmit them to the Gender and Community Development Officer and the BDA Director for further action.

22. **Start of implementation.** The mobilization and organization of road committees will already start in the first year of implementation of the project with particular focus on the communities where road tolls are likely to be established. The CRF will be formalized in project year 2 and will start disbursing maintenance funds provided by the project budget.

IV. Risks and Risk Mitigation

23. **User unwillingness to pay the road tolls and the market fees.** A number of variables affect collection such as users' expectation as to the construction and quality of the road that reflect on the vehicle performance, time saved and reduction in vehicle maintenance costs, the revenue flows and build up to meet any emergency situation as well as transparency and diligence in the management of funds by the CRF committee. The project will mitigate this risk through awareness campaigns, release of monitoring findings with regards road passability, traffic frequency, reduction in operating costs and benefit from higher market prices. Transparency in the use of collected funds will be enhanced through communication campaigns on the budget and expenditures of the CRF, and the audit findings. This communication will be primarily carried out by the road committees and the BDA.

24. **Inflation and currency devaluation threaten the future viability of the CRF.** Hence a legitimate question arises: How to dissuade the impact of inflation and the paradox (issue) of decreased purchasing power. This risk will be mitigated through the following: (i) the collection of fees should be kept ahead of the expected maintenance works; (ii) an examination of flow of benefits in table 1 reveals that revenues exceed estimated costs by a wide margin; (iii) the RAP funds that will be used to finance the road maintenance in its early stages will be kept in foreign currency and will constitute a hedge against the anticipated devaluation of the currency and of inflation. The road fees will be modified from time to time to reduce the impact of decreasing purchasing power of the CRF.

25. **Quality of the road maintenance may be less than optimal given the scarcity of**

qualified engineers. The project is hedging against this risk by investing in the training of the staff of the Road Department, the establishment of a road maintenance team within the Road Department and training of the communities on related maintenance works (particularly soil and water conservation) and the management of labor based contracts.

ANNEX VII: START-UP ACTIVITIES OF THE RURAL ACCESS PROJECT

1. This annex summarizes the start up activities for the Rural Access Project. The start-up activities described hereafter are intended to speed up the implementation of the project and to ensure the transparency of the procurement process, and that the selected contractors and consultancy firms will provide good value for money. The start-up activities extend from September 2009 to March 2010.

2. **The verification and validation of the design works for the proposed road alignment Husheib-Es Soubagh- Arab 6.** The State Ministry of Physical Planning and Public Utilities of Gadaref State will submit the revised design works for the proposed alignment by mid October 2009. A field mission will take place to verify the appropriateness of the design, especially the suitability of the proposed technical specifications with soil conditions, hydrology, and the fact that the alignment is free from land disputes. The verification and validation will involve representatives from the NHBA, MPPPU of Gadaref and Kassala, localities of River Atbara and Butana, and the communities located along the road. This exercise will take place during November 2009, by which time the final technical specifications and bills of quantities of the road will be developed and endorsed.

3. **The prequalification of consultancy firms and contractors.** The project has two major contracts to procure: the construction of the road and the hiring of the consultancy firm that will carry out the supervision of the road construction and the capacity building for the Road Departments of the MPPPU and the communities.

4. The procurement modality for the contractors will follow national competitive bidding procedures. The prequalification of the contractor firms for the road works will be carried out by the BDA with support from the Central Coordination Unit for the IFAD co-financed projects (CCU). The announcement for the prequalification will be issued in October 2009 and will be valid for two weeks. The qualification of eligible contractors will be done thereafter and is estimated to last 4 weeks. The criteria for selecting eligible contractors includes: (i) contractors already pre-qualified by the NHBA; (ii) track record in completion of works in a timely manner and within budget; (iii) availability of necessary machinery and equipment; (iv) expertise of the contractors' engineering staff. Field visits and reference checks will be carried out by the NHBA, the CCU and IFAD to qualify eligible contractors. The reference checks will consist of due diligence checks on the financial background, shareholder/registration information, etc of applicant firms.

5. Once eligible contractors are qualified, they will be invited to submit a financial and technical proposal. The proposals will be reviewed and the evaluation committee will rank them. The evaluation committee will be chaired by the State Ministry of Physical Planning and Public Utilities of Gadaref State and co-chaired by the State Ministry of Physical Planning and Public Utilities of the Kassala State, with membership from the CCU, the NHBA, MOFNE, the representatives of the Road Departments in the MPPPU, the representatives from the serviced communities, and the BDA. The CCU will act as the secretariat for this evaluation committee given its long experience in procurement procedures and knowledge of IFAD procurement guidelines.

6. In case of the consultancy firms, the procurement will follow international competitive bidding procedures. An expression of interest will be issued in October 2009 and published in international magazines and in UN sites. The shortlisting of eligible firms will be done along the following criteria: (i) track record in carrying out similar assignments with particular reference to supervision and training on the spot improvement approach and preventative maintenance; (ii) joint venture with Sudanese firm; (iii) client satisfaction with work rendered. A reference check will be conducted systematically. Again, the reference check will consist in a due diligence check on the financial background, shareholder/registration information, etc of applicant firms. Shortlisted firms will be invited to submit a technical and financial proposal. The evaluation committee evaluating the proposals of the consultancy firms will be chaired by the BDA, with membership from the representatives of the MPPPU, the NHBA, the MOFNE and the CCU. The CCU will act as the secretariat of this evaluation committee. The evaluation committee will be required to organize face to face interviews with the Team Leader and Deputy Team Leader as part of the assessment of their competencies and suitability for the job.

7. IFAD will attend the technical and financial evaluation of contractors' bids and consultancy proposals as an observer and will hire a specialist to carry out this task on its behalf. The specialist will report to IFAD and MOFNE on adherence to the criteria, and that due diligence was followed in ranking the various bids/ proposals.

8. The contract award for the road works and the consultancy services will be subject to the approval of the RAP by the Executive Board of IFAD in December 2009, entry into force of the project and no objection from IFAD on the evaluation report. The 18 month procurement plan for the RAP illustrates the timeline for this process (appendix 1).

9. **Synchronizing the implementation of the BIRDP livestock and market development activities and RAP.** The BDA is set to present its AWPB 2010 for the BIRDP to MOFNE in September 2009, to its Board of Directors for approval in October 2009 and to IFAD for no objection in November 2009. The BDA and IFAD need to ensure that the following issues are incorporated in the BIRDP AWPB 2010: (i) enrolment of the 21 communities along the road in the BIRDP ; (ii) implementation of the market rehabilitation and market information system; (iii) design works for the crossings budgeted under BIRDP; (iv) a separate section in the AWPB is dedicated to the 2010 activities and budget under RAP. The BDA should also proceed with the selection of the soil and water conservation specialist from the State Ministries of Agriculture to join the development teams in the localities of Butana and River Atbara.

10. **Supervision of the RAP.** In December 2009, the MOFNE, NHBA, BDA and IFAD will develop a joint supervision plan for the project period to ensure that construction works are regularly supervised and effectively monitored. IFAD will retain a specialized international road engineer for the full period to supervise the project and provide an independent assessment of the progress of works, cost efficiency and effectiveness of the project in achieving its physical and institutional results. In 2010, IFAD will also hire an economist to design the toll system with the Butana and River Atbara localities. From 2011 to 2013, IFAD will also retain a specialist in labour based works and community contracting to ensure that systems are developed for the labour based contracts for soil and water conservation and maintenance works. Supervision missions for this project will take place twice a year during the project duration.

11. **Start-up workshop for the RAP.** It is proposed that the start-up workshop of the RAP be implemented in March 2010 by which time the contractor and consultancy firm are selected. The start-up workshop will emphasize the physical and institutional objectives of the project; the supervision and monitoring arrangements; the arrangements for community participation. The start-up workshop will dedicate time to: (i) the reporting requirements expected from the contractor, the consultancy firm, the BDA and supervision and audit teams; (ii) the disclosure of information on the progress of works and performance of the contractors and consultancy firm; (iii) orientation on promoting greater transparency in the execution of the works and services contracts and practical measures to ensure this. In this regard, the IFAD and Government anti-corruption policies and reporting measures will be presented and discussed and the reporting contact details for IFAD and Government will be made available. .

Table 1. Schedule of start-up activities

What	When	Who	How much
The validation of the design works	November 2009	IFAD, NHBA, MPPPU	USD 10 000
The prequalification of consultancy firms and contractors.	October 2009	Led by BDA and CCU	USD 20 000 (eligible for retroactive financing)
Evaluation of bids and proposals	November to December 2009	IFAD as observer	
Synchronizing the implementation of the BIRDP livestock and market development activities and RAP	September to November 2009	Led by BDA	
Start-up workshop	March 2010	Led by BDA	Part of the RAP budget (under planning workshops, component 3)

12. **Adoption of the Project Anti-Corruption System (PACS) in RAP.** The PACS is an integrated and comprehensive system designed by Transparency International to assist in the prevention of corruption and the promotion of transparency and efficiency on construction projects. The design team proposes to adapt the PACS principles to the purpose of the project as follows:

- **Independent assessment.** The project will be audited annually and supervised at least twice a year by a joint IFAD/NHBA/MOFNE team. The audit and the supervision are considered as independent assessments.
- **Pre-contract disclosure information.** The expressions of interest for the qualification of contractors and consultancy firms will require the provision of information on principal shareholders, officers, financial status, agents, joint venture partners, major sub-contractors, and any event of criminal convictions and debarment. The applicants will be systematically reference checked. In the case of prequalifying contractors, site visits will be carried out by a team composed of the NHBA/BDA (represented by the CCU)/ IFAD.
- **Contractual anti-corruption commitments and enforcement.** As per IFAD general conditions, all contracts need now to stipulate anti-corruption commitments. The contract for works and services will include this clause, as well as penalties in case of a breach of contract. By signing the financing agreement, the Government commits to implement these General Conditions.
- **Transparency.** The progress reports of the project, the findings of the audit and supervision missions will be systematically translated into Arabic and made available to the implementing partners as well as to the road committees and other civil society organizations active in the project area. These documents will also be posted on the CCU web site.
- **Reporting on corruption or mismanagement of procurement.** During the awareness raising campaigns at community level, road committees will be responsible for the supervision of construction and maintenance works. Irregularities will be reported to the locality development teams and subsequently to the BDA Director and Gender and Community Development Officer. Corrective actions will be taken accordingly.
- **Developing a good governance framework.** Within 12 months after Board approval, IFAD and GoNU together with other interested partners such as the EU would prepare a

comprehensive good governance framework that would address concerns about empowering beneficiaries (with particular attention to transparency, participation, and third party monitoring) and include adequate measures to address concerns about misprocurement, underperformance during contract implementation, etc... The good governance framework will be geared to the road construction and maintenance works.

ANNEX VIII: THE ENVIRONMENTAL AND SOCIAL REVIEW – SUMMARY OF THE PRELIMINARY FINDINGS

I. Brief description of the project

The Rural Access Project invests in rural roads in a way that complements the transport, production and marketing infrastructure supported in the IFAD co-financed Butana Integrated Rural Development Project (BIRDP, SD-717) and the Government supported Agricultural Revival Programme (ARP).

The approach adopted for the construction of rural roads will consist of spot improvements in the form of the establishment of wadi crossings, spot repairs and treatment of gully erosion. The access road selected is the Arab 6 – Es Soubagh - Husheib alignment, a 144 km long road servicing 5 main markets.

The project area covers two localities (Butana in Gadaref State, River Atbara in Kassala State). The area is characterized by silty clay and black cotton soils where relatively poor drainage characteristics combined with flat topography results in prolonged periods of inundation during the rainy season especially in depressions and flat plain areas. Throughout the rainy season, general access to and from the main external markets is very difficult for vehicular access, livestock and people especially across seasonal streams.

The total number of direct beneficiaries is expected to be 130 000 persons equivalent to about 15 000 producer households. It is also expected that there will be 1700 additional women trading in the main markets serviced by the road. Another 136 000 persons composed of the population of the River Atbara with business and kinship ties to the Butana area are estimated to be indirect beneficiaries. Poor households constitute 80% of the rural population in Butana.

The project will contribute to the COSOP 2009-2012 goal of empowering the rural poor to increase their food security, incomes and resilience to shocks. The main project objective is to improve the socio-economic conditions of the rural population through increased access of the rural poor to productive services and markets. Four key results are expected from the project:

- Rural roads upgraded in Central Butana and regularly maintained.
- Communities are trained to manage road tolls and to engage in labor based maintenance contracts;
- State capacity is strengthened to plan, design, supervise, and maintain rural feeder roads using the spot improvement approach.

The project has 3 main components:

- Physical rehabilitation and construction of rural roads which consist in the improvement of the Arab 6 – Es Soubagh – Husheib road, implementing conservation works to protect the road from dendricular erosion; and establishing the Community Road Fund which will act as the principal financing mechanism for the routine, periodic and preventative maintenance of the road.
- Capacity building and institutional development that would target the Road Departments of the State Ministries of Physical Planning and Public Utilities (MPPPU) with formal and on-site training as well as office support; in addition to training of communities on soil and water conservation works to protect the road from gully erosion and on the management of the labour based contracts for road maintenance. Road committees will be established to organize and implement the conservation and maintenance works.
- Project management. The Butana Development Agency (BDA) will be the lead agency for this project and will be responsible for the coordination and financial management of project activities.

II. Major site characteristics, potential social and environmental impacts and risks

For the purpose of this report, the proposed road is divided into two routes to ease description and tracking. Moreover, each route is divided into sectors based mainly on natural features. these are :

- Route No. (1) Es-Subagh – New Halfa Town which is composed of the following sectors: Sector (A) Es-Subagh – Es-Sadda village and Es-Sadda seasonal stream (khor); Sector (B) Es-Sadda Village and Es-Sadda Seasonal Stream (khor) – Khor Al-Musran (seasonal stream), Sector (C) Khor Al-Musran (seasonal stream) - Arab 6 village and New Halfa Irrigated Scheme Main Drainage Canal.
- Route No. (2) Es-Subagh –Husheib village which is divided into the following sectors: Sector (D) Es-Subagh –Al-Fuwal Village; Sector (E) Al-Fuwal Village - Surooj Manana Village,
- Sector (F) Surooj Manana Village –Husheib.

Herefollows is a description of the environmental characteristics in each sector.

Sector (A) Es-Subagh – Es-Sadda Village and As-Sadda Seasonal stream (khor). This portion of the route is characterized by an apparent lack of cultivation activities. This might be attributed to the non-existence of human settlements close to both sides of the proposed route. The area is generally used for grazing grounds by both nomadic and sedentary peoples as typically the soil is light clay covered with gravels and stones that ease the movement of animals in the wet season. In addition, the area is endowed with nutritive plants, relatively good water supply in the dry season. Es Subagh market is active in the rainy season.

The extensive herbaceous cover with dominance of only one species (*Ipomoea* spp.) is considered as a sign of deterioration as historically the area is characterized by a mosaic cover of plants including grasses like *Aristida funiculata* and *Schoenfoldia gracilis* (locally known as Gaw and Dambalab respectively). However such condition calls for more practical measures to improve the grazing resources. Many interventions could be introduced like reseeded through using water harvesting techniques and this will require larger involvement of native administration and Pastoralist Union to secure sustainability with clear legislations that maintain appropriate land use. From another perspective, the improved marketing facilities and incentives combined with better accessibility will contribute to alleviating pressure on natural grazing resources in this sector and the subsequent ones.

A few shallow and narrow water courses are reported over this sector with relatively pure stand of *Acacia tortillis* subspecies *radiana* (Salam) in pockets along with a wide spread of a mixtures of *Acacia mellifera* (Kitir), *Acacia nubica* (Iaaot) and *Acacia tortillis* (Seyal) .These stands are left intact with no sign of cutting or lobbing and/or substantial gully erosion and with a tree density varying from about 30 trees/ha to 5,000 trees /ha. .Good conservation of the existing resources coupled with minimum intervention through regeneration using seed broadcasting will reverse or arrest any type of erosion. Apart from these stands which are found in association with water courses it is hard to observe any type of tree.

This part of the route is not crossing a water stream that has essential impact on recharge of water sources which are almost non-existent at the nearby environs.

The Es-Sadda seasonal stream (khor) is characterized by substantial bank erosion as clearly indicated by the excessive sand sedimentation at the curves/bends. Also, uprooted trees were noticed along the khor due to the erosive power of the torrential rain water during the last month of July 2009. Erection of any structure on the khor will need tremendous effort to avoid further bank erosion or flooding. Thus, effort is required to enrich the forest cover by transplanting or seed broadcasting as well as by appropriate technologies to reduce the negative impact of any cultivation which is currently practiced in a patchy manner by the local

population along the flooded area of the stream. Also, the existing water sources (hafirs) which are close to the stream or further new ones require more attention in design and management to avoid overflow, subsidence or collapse. For instance, good watershed management through vegetative regeneration, green fencing of hafir as well as consequent de-silting and embankment compaction are imperative.

Sector (B) Es-Sadda village and Es-Sadda seasonal stream (khor) – Khor Al-Musran (seasonal stream). This portion is traversing a rangeland with a minimum cultivation activity, which maybe encouraged following the improvement of road, due to its close location to settlements lying west to Halfa town. The area is also characterised by existence of abundant water along Khors Al-Musran and As-Sadda which are enough to sustain animals for a period of time during the wet season even when intermittent rain is reported and long dry spells. Thus, this characteristic coupled with the accessibility to Ar-Rataga and Es-Subagh livestock markets are the factors attracting pastoralists to graze in this area for a couple of weeks during the rainy season. The presence of good browsing tree species along the two khors is another benefit that attracts herders. Generally the range condition is fair and will require conservation and improvement as well as measures to prevent the acceleration of bank erosion.

Sector (C) Khor Al-Musran (seasonal stream)- Arab 6 and New Halfa Irrigated Scheme Main Drainage Canal. This sector is comparatively characterized by intensive cultivation using terraces to improve soil moisture. Although the land is relatively flat with a gentle slope, the sign of water erosion is clear. The improved road is expected to add pressure on the land by triggering cultivation in this area as this sector is close to highly populated areas. The effects of horizontal expansion of cultivation can be mitigated through improving the quality of the terraces and improved tillage techniques. Promoting appropriate land use calls for genuine cooperation between the government institutions like the Land Use and Desertification Unit of the Ministry of Agriculture of Kassala State, the Farmers Union and the Native Administration in order to regulate the use of land and limit horizontal expansion. The BIRDOP should lead such effort and explore more viable technologies to address the deteriorating condition in this sector. Already the project is piloting technological packages that may prove suitable for these conditions: the development team in River Atbara locality has implemented, on a pilot basis, a technological package focussing on terrace cultivation in similar areas neighbouring the sector under discussion. In that exercise the communities have welcomed and accepted the idea of broadcasting tree seed of *Acacia seyal* (Talih) along terraces to build shelterbelts that can generate multipurpose outputs for the benefit of both the farming households and the land fertility. Also, this idea is highly appreciated by women who constitute a considerable portion of farming labour in addition to their domestic use of the wood. This year, new communities have approached the BDA for the provision of an additional amount of seeds. Intervention in afforestation is highly required in the area around this sector. In this regard, the experience of the Farmers Union in distributing bottled gas and cookers should be supported and encouraged to alleviate pressure on tree cover as the main source of energy in cooking.

The range condition along this sector is poor in term of quantity and quality. The plant cover is dominated by one herb (*Ipomoea* spp.) with very sparse distribution of trees. So far no conflict over livestock routes as far as these routes are used only as corridors for drinking water in irrigation canals or trekking animals to the neighbouring markets at New Halfa town or Rataga. The mission noted that the farmers are cultivating close to the corridors, and proper arrangements with all stakeholders should be undertaken to guarantee a buffer zone around the proposed road for easy access of the animals to water sources and markets. This idea is supported by the fact that all these sources and places are roughly lying at the eastern terminal of the proposed road.

Sector (D) Es-Subagh –Al-Fuwal Village. This portion is characterised by numerous small water courses with sparse distribution of trees, mainly of *Acacia tortillas* (Seyal) and *Acacia nubica* (Laaot). Generally the herbaceous and arboraceous covers are better than those reported under the above mentioned sectors. For instance, trees are located in association with relatively diversified herbs and grasses including namely *Ipomoea* spp. (Tabar and Lablab) *Aristida funiculata* (Gaw) and *Schoenfoldia gracilis* (Dambalab), outside the water

courses. Roughly the tree densities were estimated at 50 to 400 trees/ha. However, as this portion is endowed with better range condition and minimum cultivation activity, it is heavily visited by pastoralists. The concentration of pastoralists is encouraged by relative availability of drinking water especially in five semi- natural water ponds clustered midway between Es-Subagh and Al Fuwal. However to keep the utilization of such grazing resources at a fair balance, distribution of water sources through excavation of small hafirs of limited capacity is important. It is worthy to mention that, despite the uncontrolled use of these semi- natural water ponds as no barbed wire fence is there or had been erected; there is vigorous growth of *Acacia nilotica* (Sunut). As this tree species is classified as a water loving plant, its presence strongly indicates the sustainability of such water ponds. Experience from the construction of other roads such as the New Halfa - Gadaref road, shows that the borrow pits excavated for the construction of the road were completely colonized by such species (at the upstream end of the road). Such colonization assists in providing wind break as well as preventing overflow that may lead to road damage or causing water logging that may hamper movement along the sideway of the road by other users like pedestrians or trekked animals . In the case of the alignment Es Subagh-Al Fuwal, this natural regeneration could be strengthened by seed broadcasting in borrow pits, seasonal hafirs and other low lying lands. Also, improvement activities in rangeland should be pursued by reseeding.

The mission would like to also caution against the use of borrow pits for the purpose of commercial sale of water. Indeed this practice is reported in River Nile State in the Northern part of the Butana, where commercial tankers collect water from natural ponds and sell to villages affected by water shortages in the dry season. This has led to the complete depletion of such ponds and to high competition over grazing resources with subsequent friction and land degradation. Although the state has valid and effective legislations that prohibit the collection of water by commercial tankers from Hafirs (constructed earth tanks), such legislation do not cover natural water ponds. Accordingly, the mission recommends that such safe legislation be instituted in the Kassala and Gadaref states to prevent commercial exploitation of water accumulating in the borrow pits used for the construction of the road.

Sector (E) Al-Fuwal Village - Surooj Manana Village. This sector is well known for its vast and low lying land with frequent steep slopes and to some extent patchy tillage using different tractor mounted-implements. Although the improvement in road may not have substantial negative environmental impact on this sector, the main environmental risk is caused by inappropriate tillage practised parallel to the slope, and signs of gulley erosion are apparent. The mission recommends the introduction of technological packages for improved tillage, introduction of soil moisture conservation techniques and planting of leguminous crop. The improved accessibility of the area would facilitate the availability of agricultural services like tractors which movement at the moment is restricted by water courses. The mission also suggests to support research on the optimum time for ploughing and sowing that takes into account the environmental and socioeconomic impact as well as yield per unit of land area and could prevent the horizontal expansion of cultivation in view of the increased availability of mechanization.

The range condition in this sector is fair as heterogeneous cover of range plants is reported. People are reported to come from Es-Subagh to this area to harvest dry natural forage and grasses to thatch the roofs of the houses. This is usually done either by traditional tool or by hand pulling, leaving the land bare and entirely without standing hay or debris for protection against wind and water erosion. This practice may be further encouraged by improved accessibility and therefore corrective measures will be needed. These measures would include awareness & training package for the local communities; orienting the population to cut grass above the ground (5 centimetres) and to use appropriate tools like sickle for cutting. Also cutting could be done in patchy pattern or along strips in alternating manner to make shelter for protection against wind and water. Also, proper devices for cutting could be explored by modelling new prototypes. In conclusion, the Cut and Carry System could be supported by improved road and could generate improved husbandry of forage crops and grasses and institution of appropriate regulations to protect against erosion and deterioration of vegetative cover.

Sector (F) Surooj Manana Village —Husheib Village. This sector is relatively characterized

by numerous and wider water courses in addition to depressions locally known as “mayaa”. The massive gully erosion is apparent along these courses. Despite this, the sector represents a good ecological niche for the growing of *Acacia mellifera* (kitter) in addition to *Ziziphus spina-christi* (sidir) and *Acacia tortillis* (seyal). The tree cover density is varying from 30 trees to 2,000 trees/ha. This cover gives peculiarity to the area as a good rangeland, although this is hampered by the difficult movement over muddy terrain in the rainy season and relative scarcity of drinking water during the dry season. The main cluster of Husheib, lying at about 5 kilometres east to the proposed road, has the only available water source in the dry season. About 10,000 heads of camels, 1,500 cattle and 6,000 small ruminants are visiting this source on a daily basis. The water is provided by about 40 open wells through using pulleys with a limited use of motorized devices in drawing out water. Although the water table and yield is improving following the construction of a water dyke by the federal government under the Agricultural Revival Programme, the availability of drinking water is a cause of concern to the livestock owners and herders. Therefore, borrow pits should be done in such a way to improve water availability. This idea is usually favoured by the dominance of non porous soil layers which are more probable in this sector.

Improved accessibility may encourage trading in fuel wood and charcoal in this area as generally the communities are poor and rely on charcoal making and sale for their livelihood. Incentive measures are needed to encourage the local communities to assume their roles over conservation and enriching of the existing tree cover in addition to formulation of alternative income generating activities to support decent livelihoods.

In addition to the description of the flora, as done above, the mission also noted the following fauna: the Grasshopper Hawk; Egyptian Vulture; Nubian Vulture; Pied Crow; Nubian Bustard; Abdim's Stork; Little Egret; Grey Heron; Open Bill Stork; Caramine Bee Eater; Green Bee Eater; Black Headed Plover; Mourning Dove; Macquae Dove; Crested Lark; Quela Quela; Sand Grouse; House Sparrow; Black Sparrow; Rabbits; Cobras and Puff Adders; Grasshoppers and centipedes are in good numbers. There are no sightings or reports of any other animal taxa; not even Jackals, squirrels, Jerboas, or rodents. There are no known bird migration flyways, nesting or breeding sites.

III. Environmental and social issues

As described in the previous section, the Butana is affected by environmental deterioration as a result of an array of practices related to farming, herding and mining of the vegetative cover. By increasing the accessibility of the Butana, the negative impacts of farming and mining the vegetative cover are likely to be exacerbated. The main environmental issues related to the construction of the road and increased accessibility to Butana are as follows:

The competition over scarce water resources in the dry season. The camp location and water source for the construction works will need to be carefully selected in order to avoid competition over drinking water with the population. It is recommended to truck water during the first season of the road construction. Thereafter, the contractor will construct water harvesting sites from which water can be made available locally. Reliable water sources are certain to attract farmers and herders. Moreover, the location of the water sources should, as far as possible, be related to the range carrying capacity. That is to say, decisions should not be taken on engineering merits only and this consideration should feature prominently in the construction contracts.

The location and construction of burrow pits. The burrow pits are likely to later become natural water ponds and to facilitate the generation of trees. To the extent possible the burrow pits should be located to facilitate animal drinking and grazing along the stock route corridors into Butana, as well as to protect against the commercial exploitation of the collected water through appropriate administrative decrees and community awareness. Siting of lined engineered burrow pits during road construction should be carefully considered using topographic satellite imagery maps, soil type, drainage and local relief. The raised embankment of the road could be used to train and direct water into storage structure and decrease erosion due to uncontrolled runoff. This could work in low lying terrain (such as mayaa's or depressions).

The management of waste material from the construction sites. The construction contract should stipulate that the contractor will store the waste safely and remove it upon completion of works. The contractor could also be mandated to restore the site upon completion of works.

The horizontal expansion of cultivation. The increased accessibility resulting from the road construction is likely to encourage farmers to expand cultivation and to increase demand on mechanization. Given the erratic rainfall and the principal attribute of the Butana area as grazing land given the ecological constraints, the horizontal expansion of cultivation should be controlled. This would be promoted through appropriate technical packages favouring soil and water conservation and afforestation techniques, promoted under the on-going Butana Integrated Rural Development Project.

Land disputes. The alignment selected should be free from land disputes and this should be validated with the local population. Alternatively the road alignment should be changed or compensated ensured by the local government.

IV. Potential social and environmental impacts and risks

The potential social and environmental impacts and risks are summarized below along with the proposed mitigation measures:

Potential Negative Impacts	Mitigating Measures
Direct impacts during construction <ul style="list-style-type: none"> – Erosion from fresh road cuts and fills and temporary sedimentation of natural drainage ways. – Ground and water contamination by oil, grease and fuel in equipment yards. – Creation of stagnant water bodies in burrow pits, quarries etc suited to mosquito breeding and other disease vectors. – Environmental and social disruption by construction camps. – Dispute over land. 	<ul style="list-style-type: none"> – Limitation of earth moving to dry season. – Protection of drainage channels. – Installation of sedimentation basins, seeding or planting of erodable surfaces promptly. – Collection and recycling of lubricants – Employment of improved landscaping, filling or drainage to avoid creating habitats. – Careful siting, construction and management of construction camps. – Check alternative alignment; negotiate the public utility of the road; and compensation payment if required by local government.
Direct: Permanent <ul style="list-style-type: none"> – Destruction of buildings, vegetation and soil in the right of way burrow pit sites, and equipment yards, – Erosion below the roadbed receiving outflow carried by drains. – Increased suspended sediment in streams affected by road cut erosion, decline in water quality and increased sedimentation downstream. – Health hazard and interference of plant growth adjacent to road by dust raised and blown by vehicles. – Contamination of ground and surface water by herbicides for vegetation control and chemicals for dust control. – Creation of a new pathway for disease vectors affecting humans and animals. 	<ul style="list-style-type: none"> – Alternative alignment. – Compensation given to property owners. – Restoration of sites. – Increase in number of drain outlets. – Drain outlets placed so as to avoid cascade effect. – Lining of receiving surface with stones or concrete. – Establishment of vegetative cover on erodable surfaces as soon as possible. – Establishment of retention ponds to reduce sediment load before water enters streams. – Dust control by application of water in sensitive areas.

The mitigation measures outlined above particularly with regards drainage, soil and water

conservation works and establishment of vegetative cover to protect against soil and water erosion are provided for in the technical specifications of the road construction (please refer to working paper 1 on the engineering aspects). It was also observed that for civil works contracts issued by Gadaref State, clauses are included that refer to environmental conservation. In the case of the RAP, this can be replicated to specify the siting of the contractors' camp, the burrow pits, and the management of the waste.

V. Environmental category

Siting of a road is the most critical decision in road construction. It will largely determine the type and magnitude of environmental and social impacts that will result from road construction. The mission is of the opinion that the present siting of the road is excellent. It avoided many mayas (depressions where water accumulates) and khors while fulfilling its primary objective (improving accessibility during the rainy season). Given the risks, the mitigation response and the responses included in the design of the Rural Access Project and the Butana Integrated Development Project, the environmental classification of the project is category B. This means that the project does not merit a full-fledged Environmental and Social Impact Assessment. In this case, the Environmental Screening and Scoping report should be adequate. It is also worth mentioning that the Sudanese Environmental Act of 2001 does not specify or categorize projects. It does not have by-laws addressing such issues.

VI. Further information required to complete screening and scoping

The present environmental assessment has highlighted the need for:

- a land use plan to control the expansion of crop cultivation and safeguard the grazing areas;
- the need for a master plan for the development of water resources in Butana. This would be based on an inventory of the water sources, locating key water structures taking into account upstream/ downstream uses and carrying capacity of the range, as well as optimal management measures.

Such studies can be completed within the BIRD budget for carrying out a resource inventory and monitoring biodiversity.

VII. Recommended features of project design and monitoring to improve natural resources management and to mitigate environmental concerns

The environmental issues identified above will be addressed by the Butana Development Agency through its two projects, the Butana Integrated Rural Development Project and the Rural Access Project.

The main mitigation measures fall within the scope of the Butana Integrated Rural Development Project (BIRD). Indeed, the BIRD aims to improve in a sustainable manner the livelihoods and resilience to drought of the poor rural households. The specific objectives of the project include: (i) establishing a coherent and cost effective governance framework that ensures a regulated access to land and water resources of the Butana; (ii) improving the access and bargaining position of women and men in the marketing of livestock; (iii) developing the capacity of community-based organizations to engage in environmentally sound, socially and gender equitable development initiatives. The mitigation measures for the horizontal expansion of cultivation are included in the range of activities of the agriculture, range and water development component. The main outputs of the component would include: improved on-farm water use and efficiency, improved carrying capacity and biodiversity of the range, improved water accessibility and affordability.

The following technological packages are proposed under the BIRD and respond to the mitigation measures recommended in the section above: (i) the key techniques for rangeland development and improvement are reseeding, resting and deferred grazing, fire line, and water management; (ii) modification of traditional terrace cultivation through the introduction of chisel plowing in lieu of the current destructive disc plowing, use of early maturing varieties

intercropped with leguminous crops such as cowpea, introduction of inter/ intra-row spacing, practice of thinning, weeding, and control of harvest and post-harvest losses; (iii) improvement of wadi/ depression cultivation through the introduction of minimum tillage techniques, use of quick maturing crop varieties, crop rotation with leguminous plants and vegetables (such as watermelon) and plantation of the wadi boundary with local tree species for protection and plant cover regeneration (*Ziziphus spina christii*, *Acacia seyal*).

The promotion of appropriate legislation and community awareness and collaboration is also included in the institutional development and project management component of BIRDP. Indeed the output of this component is the formulation and enforcement of a regulatory framework for water and range governance in the Butana. The negotiation of appropriate environmental legislation and building community capacity accordingly constitutes key activities.

The BIRDP provided for the set up of an Environmental Monitoring System (EMS) that will rely on spatial analysis and remote sensing techniques to track the status of the vegetative cover before the project interventions and the changes in the nature and composition of the vegetative cover over the project life. This work will be complemented with ground truthing to monitor the biodiversity of the vegetative cover and its carrying capacity. Approximately USD 422 000 were budgeted under the BIRDP for resource inventory and monitoring biodiversity.

In relation to the Rural Access Project, the aspects related to access to water, location of camps and burrow pits and waste management will be addressed as part of the technical specifications for the construction of the road and will also be incorporated in the clauses of the contract.

VIII. Monitoring Aspects

The monitoring of the RAP environmental impacts is covered under the environment monitoring system proposed for the BIRDP. The relevant section is reiterated here for ease of reference.

The data collection for environmental monitoring will be done through surveys performed by competent agencies. For the vegetative cover, satellite imagery data over the Butana on or around end of August will form the basis of the needed information. By then the maximum amount of precipitation would have been received. Analysis of the imagery data, and comparison with the long term Butana NDVI data already available, will reveal the status of water and grazing and their distribution over the plain. This data shall form the basis for formulating a policy to regulate land use, grazing areas, and drawing a timetable for livestock exit strategies, depending on the status of range and water.

Environmental monitoring indicators for the RAP project area will include the following:

The Clay Plain

- Number of water harvesting sites constructed annually on the clay plain
- Number of seedlings distributed and seedling growth rate
- Area in ha under reseeding or protection, by type of range (open access or community range)
- Carrying capacity of the range by type of range (open access range and community range)
- % ground coverage by mesquite tree
- % change in land use
- % change in waterbodies
- NDVI trend

Soil and Gully Erosion

- % change in land use and especially of forested areas
- % change in waterbodies
- NDVI trend

Indicators pertaining more specifically to the management of water and range conditions will include:

- Cover by bare ground
- Cover by sand dunes
- Ground storey vegetation coverage, including crops
- Distribution of hafirs, dams and water facilities and water availability
- Signs of sorghum cultivation beyond the grazing line 14 45 degrees North

The results of the resource inventory should be presented in maps. Water facilities distribution and distances between them, type of facility, current status (functioning or not), design capacity, main type of use, method of management, and type of rehabilitation needed, should also be compiled and tabulated. The map should be widely distributed, and discussed.

The focal point for data collation, interpretation and preparation of aggregated maps and database will be the Remote Sensing Authority in the Federal Ministry of Science and Technology. The Remote Sensing Authority will then disseminate the results of the EMS on a regular basis to the BDA, State Coordination Units. The latter will be responsible for their distribution to the concerned departments at state and locality level. The findings of the EMS will also be communicated at the annual policy fora organized by the BDA. For the surface and groundwater monitoring and relevant equipment will be contracted to a competent agency under the supervision of the State Water Corporations and the BDA.

IX. Record of Consultation with beneficiaries

The mission discussed with the beneficiaries the overall degraded situation of the environment in the Butana as well as the potential impacts of the road. The following are excerpts of the main opinions voiced by villagers:

- Trees planted on constructed ‘terraces’ are welcomed by villagers. They felt that seeding the shoulders of the new roads could be a good idea.
- The scenario of land disputes could be true from 6 Arab to Al Musran where there is predominance of agriculture as opposed to grazing.
- The road could have a negative impact on grazing and forestry.
- The worst case scenario is that farms would plough the land after the first few showers. In case there are no rains thereafter the pasture as well as the crops would be lost.
- There are no clear village perimeters and no well defined cattle routes.
- Horizontal expansion in agriculture is unprecedented.
- The road will create many opportunities and attract hordes of new comers.
- The range carrying capacity and the water potential of Butana have never been estimated
- The number of khors, volume of discharge etc is not known.
- There is an acute energy problem. The Farmers Union provided villages with butane cylinders. This is a positive contribution.
- There is room for Village Woodlots. Afforestation of terraces could be the way out.
- Horizontal expansion in agriculture should be controlled at this point in time.
- Blocking khors, as a form of water harvesting, is common without any due consideration to hydrological or social consequences or the needs of the downstream users. This should not be encouraged.

The excerpts above indicate that the villagers have a good sense of the status of the environment and the deterioration of the resources, and are willing to adopt techniques that would alleviate such deterioration. The pressure on agricultural expansion – likely to be exacerbated by the road construction – will need to be mitigated through an active extension programme under the BIRDP.

Appendix 1. Environmental legislation in Sudan

The Environment (Protection) Act, 2001

Sudan is one of the first African countries that passed sectoral laws for the protection of the Environment. The Environment Protection Act, 2001 that was enacted in accordance with the former Constitution of the Republic of the Sudan is the principal legislative framework providing for uniform rules of substance and procedures on protection of the environment and use of natural resources.

Customary Law Land Rights

Ethnic communities are territorialized in the Sudan. Each community or its faction inhabits a definite territory (known as Dar in Arabic) over which it exercises certain group rights.

The principle rights brought to my notice apart from the normal user were:

- The right to admit or refuse strangers to water or graze in the Dar and the right to impose conditions on such entry.

- The right to build permanent buildings in the Dar.

- The right to cultivate.

- The right to sink new wells, or dig out old ones.

- The right to beat the Nuggara (drum) and to put Wasms (tribal marks) on the trees and rocks.”

Since Dar rights are subject to encroachment by the government, it is worthwhile to see the extent of the encroachment. It may be well to add that customary law has no system of land registration.

Land Legislations

Before 1984, land use and acquisition of land rights were regulated by seven pieces of legislation, namely:

- The Sudanese Disposition of Lands Restriction Act 1918.

- The Disposal of Unoccupied Town and Village Lands Act 1922.

- The Pre-emption Act 1928.

- The Prescription and Limitation Act 1928.

- The Unregistered Lands Act 1970.

- The Rent Restriction Act 1982.

- The Land Settlement and Registration Act 1925.

In 1984 came the Civil Transaction Act (CTA). This act repealed and re-enacted the six first-mentioned Acts, of immediate relevance to Dar rights is Section 559 of the CTA. The act provides that any unregistered land belongs to the government as if it has been registered under the Land Settlement and Registration Act 1925. This provision first appeared in the Unregistered Lands Act 1970.

Constitutional Directive Principles of State Policy

The Interim National Constitution 2005, Part I, embodies directive principles of state policy. Article II, titled “Environment and Natural Resources” needs to be quoted in full:

The people of the Sudan shall have the right to a clean and diverse environment; the state and the citizens have the duty to preserve and promote the country’s biodiversity.

The state shall not pursue any policy or take or permit any action, which may adversely affect the existence of any species of animal or vegetative life, their natural and adopted habitat.

The State shall promote, through legislation, sustainable utilization of normal resources and best practices with respect to their management.

Guiding principles of state policy are also incorporated in Interim Constitution of Southern Sudan 2005, Part III. The relevant Article is 44 titled “Environment”. It reads:

Every person or community shall have the right to a clean and healthy environment.

Every person shall have the right to have environment protected for the benefit of present and future generations, through reasonable legislative action or other measures that:

- a. Prevent pollution and ecological degradation;
- b. Promote conservation;

Environmental Agreements ratified by Sudan.

Specific details and procedure on land are found in sectoral laws including:

Land Settlement and Registration Act 1925 provides rules to determine rights on land and other rights attached to it and ensure land registration.

Land Acquisition Act 1930 gives the government the power to appropriate lands for development purposes. It contains detailed procedures to be followed in acquisition of land and rules governing payment of compensation for land required for public purposes.

The Civil Transactions Act 1984 regulates the different matters related to civil transactions with respect to titles on land, means of land acquisition, easement rights and conditions to be observed by land users. It also incorporates the provisions of the Unregistered Land Act 1970 which has been repealed.

Urban Planning and Land Disposal Act 1994 regulates designation of lands for different purposes and urban planning. With respect to land expropriation for public purposes, Section 13 of the Act recognises the application of its predecessor – Land Acquisition Act 1930.

Forests and Renewable Resources Act, 2002 – this Act includes the provisions of the Central Forests Act, 1932 and the Provincial Forest Act, 1932 which have now been repealed. The Central Forests Act, 1932 empowered the Minister of Agriculture, Food and Natural Resources to declare a central forest reserve an area of land, which is registered under the Land Settlement and Registration Act, 1925 as Government land. Unless a special license or a permit has been first obtained from the Director of Forest, any act, including entry upon or remaining in such forests is an offence.

The Environmental Health Act, 1975 contains detailed provisions for the protection of water and air from pollution and assigns defined administrative responsibilities to District Councils with respect to preservation of environmental health in general.

In carrying out EIA, the legal requirements are not confined to the above mentioned Acts. There are other important sectoral laws that must be considered and used as a yard stick or standard to identify the negative environmental effects.

The Electricity Act of 2001 controls the electricity market. It provides regulations regarding the protection of network and standards regarding environmental protection. Article (9) of the said Act requires that any developer (investor) must comply with existing laws regarding roads, water courses, communication network, environmental issues and archaeological sites. Article (13) explains the environmental standards that must be taken into consideration when establishing power plants. Article (17) requires compensation to any damage that the project may cause to humans, animals and property.

Land Acquisition

The procedures for land acquisition in any locality are initiated with notification by the People's Executive Council in a Gazette stating that it appealed to the President of the Republic to authorise the acquisition of land for public purposes (Section 4). It is only after such notification that it shall be lawful to enter into, bore, set out boundaries, mark or survey land.

An appropriation officer appointed by the People's Executive Council would notify the occupant whose land is to be appropriated for public purposes, call upon persons claiming compensation to appear before him at a place and time (not earlier than 14 days) and to state the particulars of their claims for compensation (Section 10). He must attempt to agree on the amount of compensation for that land (Section 10). The Act provides for

further steps to be taken with regard to assessment of compensation if agreement is not reached.

International Agreements

Sudan has ratified and is party to the following international environmental conventions and protocols pertaining to the Project:

- The 1992 United Nations Framework Convention on Climate Change (UNFCCC),
- The 22 March 1989 Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal.
- The 5 June 1992 Convention on Biological Diversity,
- The 1933 Convention Relative to the Preservation of fauna and flora in their Natural State,
- The 1951 International Plant Protection 1951
- The 1968 African Convention on the Conservation of Nature and Natural Resources
- The 1971 Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, (amended in Paris, 1982)
- The 1972 Convention Concerning the Protection of the World Culture and Natural Heritage,
- The 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora,
- The 1979 Convention on the Conservation of Migratory Species of Wild Animals,
- The 1982 United Nations Convention on the Law of the Sea,
- The 1982 Regional Convention for the Red Sea and the Gulf of Aden Environment
- The 1987 Protocol Concerning Regional Cooperation in Combating Pollution by Oil and other Harmful Substances in Cases of Emergency,
- The 1985 Vienna Convention for the Protection of the Ozone Layer
- The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer,
- The 1991 Bamako Convention on the Ban of the Import into Africa and the Control of the Transboundary Movement and Management of the Hazardous Wastes,
- The 1994 International Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification Particularly in Africa,
- The 1997 Kyoto Protocol
- The 1998 International Legally Binding Instrument for the Application of the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade,
- 2000 Cartagena Protocol on Bio-safety to the Convention on Biological Diversity
- 2001 Stockholm Convention on Persistent Organic Pollutants,

The parties to the Convention agree to “promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems”.

Sharia and Traditional (Customary) Laws

In brief, Sharia (Muslim) laws and traditional, customary laws were the basis of Sudanese life before the British conquest of the Sudan in 1898, when Civil Law was introduced. Denying any intervention with religious freedom, the British established two separate legal systems: Civil Courts and Sharia Courts. Over the years, recognition has also been given to traditional leadership and their related powers. The Interim National Constitution of the Republic of Sudan (INC) (2005) has, however, introduced laws that are not always consistent with Sharia laws; for Muslims, inheritance and most family laws fall within the Sharia Courts. In addition, many traditional customs and practices around leadership and the resolution of disputes have been replaced. The INC does recognise this, and states: the Sudan is “an all-embracing homeland, where religions and cultures are sources of strength, harmony and inspiration”, and is “a democratic, decentralised, multicultural, multi-lingual, multi-racial, multi-ethnic, and multi-religious country where such diversities co-exist”.

Relevant Policies and Institutions

Two key strategies deal with sustainable development in the Sudan, namely:

- Environment Strategy (part of the comprehensive strategy) 1992 – 2002.

Quarter Century Strategy 2002 – 20027.

The Institutions of most relevance to this Project are:

- The Ministry of Environment and Physical Development (MEPD)
- The National Roads and Bridges Authority.
- The Ministry of Urban Planning and Housing.

The reviewed Acts and laws provide standards to be considered in assessing the environmental impacts of the Project. It is important to note here that State organs and local laws deal with issues at State or local levels, while the Federal Acts are more concerned with general directives and set limits and standards to certain environmental concerns without detailing problems of a local nature.

In Sudan concerns for environmental protection are reflected in major legal instruments (Constitutions and Proclamations/Acts). Such instruments cover detailed provisions guiding the environmental and social impact assessment of projects. Sudan has institutional arms in place that would ensure implementation of its policies and legislation. Thus the legal and institutional framework is in place to adequately assess the Project and ensure that adequate measures are undertaken to minimise the adverse impacts and to ensure that project affected persons are not adversely disadvantaged.

Other laws of relevance to this project include

The Investment Act of 1999 which requires an EIA study as a condition for granting a licence to implement a project.

The Labour Act, 1997 which tries to protect the work environment and safety of workers and the Location of Industries Act of 1977 which prohibits the location of industries in residential areas. Prevention of public health hazards at Project construction sites will be dealt with via engineering good practice guidelines contained in construction contracts.