



**New Partnership for
Africa's Development (NEPAD)
Comprehensive Africa Agriculture
Development Programme (CAADP)**



**Food and Agriculture Organization
of the United Nations
Investment Centre Division**

GOVERNMENT OF THE KINGDOM OF LESOTHO

SUPPORT TO NEPAD–CAADP IMPLEMENTATION

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Volume II of V

BANKABLE INVESTMENT PROJECT PROFILE

Crop Production: Small-scale Irrigation Development Project

February 2005

LESOTHO: Support to NEPAD–CAADP Implementation

Volume I: National Medium–Term Investment Programme (NMTIP)

Bankable Investment Project Profiles (BIPPs)

Volume II: Crop Production: Small–scale Irrigation Development Project

Volume III: Conservation and Land Improvement Project

Volume IV: Livestock Development Project

Volume V: Support Services Programme

NEPAD–CAADP BANKABLE INVESTMENT PROJECT PROFILE

Country: Lesotho

Sector of Activities: Irrigated Cropping Development

Proposed Project Name: **Crop Production: Small–scale Irrigation Development Project**

Project Area: National – 10 Districts

Duration of Project: 5 years

Estimated Cost: Foreign Exchange..... US\$54.2 million
Local Cost..... US\$13.2 million
Total..... US\$67.4 million

Suggested Financing:

<i>Source</i>	<i>US\$ million</i>	<i>% of total</i>
<i>Government</i>	6.5	10
<i>Financing institution(s)</i>	48.8	75
<i>Beneficiaries</i>	3.2	5
<i>Private sector</i>	6.5	10
<i>Total</i>	65.0	100

LESOTHO:
NEPAD–CAADP Bankable Investment Project Profile
“Crop Production: Small–scale Irrigation Development Project”

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Abbreviations

ADB	African Development Bank
AEZ	Agro Ecological Zone
AgSeSt	Agricultural Sector Strategy
AWPB	Annual Work Programme and Budget
CAADP	Comprehensive Africa Agriculture Development Programme
CBO	Community Based Organisations
DFID	UK Department for International Development
FAO	Food and Agriculture Organization of the United Nations
IDA	International Development Agency
IFAD	International Fund for Agriculture Development
IMSC	Inter-Ministerial Steering Committee
MAFS	Ministry of Agriculture and Food Security
MFLR	Ministry of Forestry and Land Reclamation
MNR	Ministry of Natural Resources
NES	National Environmental Secretariat
NGO	Non Governmental Organisation
NMTIP	National Medium-Term Investment Programme
PC	Project Coordinator
PCU	Project Coordination Unit
PMC	Project Management Committee
PRA	Participatory Rural Appraisal
SADPMA	Sustainable Agricultural Development Project in the Mountain Areas
SPFS	Special Programme for Food Security
SWACAP	Soil and Water Conservation and Agro-forestry Project
TA	Technical Assistance/Assistant
TNA	Training Need Assessment
UES	Unified Extension System
WV	World Vision

I. PROJECT BACKGROUND

A. Project Origin

I.1. The present project is proposed in support of the capital investment programme of the *Ministry of Agriculture and Food Security* (MAFS) over the period 2004 to 2009. It is based on continuation of crop and irrigation projects being implemented with the capital budget of the ministry, and on gaps identified and experiences built up from recently completed projects in the sub-sector. Most importantly it is formulated to implement both the national *Agricultural Sector Strategy* and the *District Extension Strategies* of participating districts.

I.2. Projects within the CAADP represent an extension of the *Agriculture Sector Development Programme*. They translate the priority objectives of the *Agriculture Sector Strategy* into projects suitable for financing by external as well as local development partners. The formulation of the strategy was completed in August 2003.

I.3. A stakeholders’ workshop held in May 2004 validated the broad objectives of the CAADP projects, while the detailed implementation will commence with consultation at the local level in the form of participatory rural appraisals and socio-economic studies. The present project is part of the continuing effort to concretise the government’s strategy of expanding land under irrigation across the country through adoption of the conventional systems a range of technologies that include small gravity based ones.

B. General Information

I.4. ***Geographical and Socio-Economic Setting.*** Lesotho is a land locked state in southern Africa and surrounded completely by the Republic of South Africa. It is situated approximately between 28°S and 31°S latitudes and longitude 27°E and 30°E. The land area is about 30,000 km². The arable land area is about 9 percent of the total area. However, the arable land is vulnerable due to severe soil erosion.

I.5. Increase in population and livestock exert immense pressure on land use leading to a continuing spiral of poverty, which, in turn, leads to further degradation and deterioration of land resource. Steep slopes and highly erosive rain, erodible duplex soil that prevail over much of the country, poor land husbandry, unsustainable grazing patterns — all combine with a communal land tenure system, to aggravate the problem of soil erosion and loss of fertility. Soil loss through erosion is currently estimated at about 13.2 tonnes per hectare totalling 40,000 tonnes per annum.

I.6. ***Climate.***¹ The climate is influenced by location in the sub tropical high pressure zone and at latitudes between 1,400 m and over 3,480 m above sea level. This produces cold and dry winters and hot and fairly humid summers. Mean annual temperatures range from 15°C in the lowlands to 7°C in the highlands. Extremes of temperatures occur in the highlands at -6°C to +32°C in the lowlands. On average frost occurs in the lowlands between mid-May and early September and in the lowlands between mid-February and late November with frost risk days of 111 days and 276 days in the lowlands and in the mountains, respectively.

I.7. Precipitation is variable across space and time from around 500 mm in the Senqu River Valley which lies in the rain shadow of the Drakensberg mountains, to up to 1,200 mm in the north-

¹ Source: Lesotho Meteorological Services

eastern corner of the country. Between 75 and 85 percent of rainfall occurs in the seven wet summer months from October to April of each year and the lowest occurs in June when monthly totals of 15 mm are recorded in most stations. The highlands experience snow on an annual basis while the low lands experience it occasionally. Average monthly evaporation ranges from 60 to 70 mm in the June–July period to between 175 mm and 225 mm during the December–January period. Mean annual evaporation is always greater than precipitation with the deficit greatest in the summer months.

I.8. **Water Resources.** Mean annual runoff from the three main rivers that drain country is estimated at 180 m³/s, equivalent to 5.6 km³/annum per year. The groundwater resources have been estimated at 5.9 km³ of which 0.34 km³ is renewable. Groundwater in the form of springs and sources of most rivers, and water supplied from boreholes constitutes over two thirds of rural drinking water supply. Exploitation of groundwater for purposes of irrigation has only just begun on a small scale under projects in the mountain regions.

I.9. **Irrigation Development, Constraints and Opportunities.** The total irrigable land in Lesotho is estimated at between 12,000 and 36,000 hectares of which no more than 2,637 ha have hitherto been developed and of which less than 200 ha are still operational. The failure of past schemes is attributed to the reluctance of farmers to operate these schemes on a cooperative basis and has led government to contemplate a different arrangement whereby only the irrigation infrastructure is communally managed.

I.10. Thus a large part of arable land is under rain-fed farming. Winter grazing of fields after harvests leads to exposure of soils without adequate vegetative cover to winds, and alternations of heat during the day and cold at night. In the process soils are deprived of organic content, suffer compaction poor tillage practise and from trampling by animals. Some soils are naturally of poor structure and texture lack the ability to retain moisture. The low and declining fertility due to poor husbandry and soil erosion results in declining production. Thus opportunities exist to improve moisture management in non-irrigable land through conservation agriculture and to develop up to the full potential of irrigable land.

I.11. **On-going and Planned Developments.** A number of efforts have begun to develop small scale irrigation on-going projects and those financed from the capital budget of the government . In addition pioneer commercial farmers are intensively investing in ventures that either involve rehabilitation of defunct schemes or are operation in freshly identified potential areas. The projects are listed in the NMTIP document.

I.12. **Institutions, Policies and Legislation.** Agricultural water management falls under the responsibilities of several departments. The *Irrigation Division* of *MAFS Crop Department* is responsible for development of irrigation projects, while the *Ministry of Forestry and Land Reclamation* (MFLR) has capacity for construction of small dams. The *Department of Water Affairs* of the *Ministry of Natural Resources* (MNR) is responsible for hydrological services, resource management, water-resource planning, and water-quality monitoring while the *Commissioner for Water* is overall responsible for custody of water resources. As some of these institutions have only recently seen the light of day, issues of coordination remain to be addressed.

II. PROJECT AREA

II.1. The project covers all ten districts of the country. In line with the *Crop Production Programme* to which it provides support, the majority of its focus is in the central District of Maseru as well as the four northern Districts of Berea, Leribe and Butha Buthe. Irrigable areas are those with suitable soils in terms of drainage and soil moisture retention, with adequate slopes to avoid erosion and with available water resources to render each scheme economically viable. The prioritization for purposes of implementation in line with the participatory approach will be determined during the planning part of the learning cycle under the *Unified Extension System* (UES).

A. Agro-ecological Conditions

II.2. Lesotho is divided in four main *Agro-ecological zones* (AEZs) as follows: the Lowlands, the Foothills, the Senqu (Orange) Valley and the Mountains: ***The Lowlands*** cover the western part of the country and occupy about 5,200 km² which is 17 percent of the total surface area. This region is a narrow strip of land extending at some places just 10km from the border to 60 km at some places and it which lies between 1,400 m and 1,800 m. The northern and central lowlands are characterized by large deposits of rich volcanic soils, while the southern or border lowlands are characterized by poor soils and low rainfall. ***The Foothills***, on the other hand, consist of very fertile land that is associated with high agricultural productivity. The foothills are defined as the area between the lowlands and the highlands and occupy an estimated area of about 4,600 km² which lies between 1,800 m and 2,000 m above sea level and forms 15 percent of the total land area.

II.3. The ***Senqu River Valley*** forms a narrow strip of land that flanks the banks of the Senqu River and penetrates deep into the highlands, reaching lower parts of the main tributaries of this river. This region covers 9 percent of the total surface area. The soils of the Senqu River valley vary from rich to very poor, making this the most unproductive region in the country

II.4. ***The Mountains*** constitute the largest ecological area which cover an area of 18,047 km² of the Drakensberg range. This region has been extensively dissected by the headwaters of the Senqu River and its tributaries which drain in a north-south direction, and, which together with an extensive network of mountain wetlands, today forms an important segment of the Southern Africa region's water resources. The drainage pattern of the highlands or Mountain region has produced deep river valleys, gorges, and gullies that, in general, make human very life difficult. The region forms the main livestock grazing area in the country.

B. Land Availability, Distribution and Tenure

II.5. Indirect irrigation in the sense of control of overland to improve moisture management in primarily rain-fed systems is covered by a separate *Conservation Project* under CAADP. With the *Crop Production Programme* the irrigation component will address locations within the project area that have adequate potential for irrigation in terms of soil characteristics that enable returns from investment in irrigation as well as increase in crop production.

II.6. Locations targeted for micro-irrigation systems are nearly evenly distributed across the project area but occur in the lowland areas close to perennial streams and rivulets and in the foot hills closer to springs and sources of streams. Areas adjacent to dolerite dykes permit the use of disused boreholes and drilling of new ones where necessary.

C. Characteristics of Irrigable Areas and Irrigable Soils

II.7. The water harvesting and irrigation component targets three categories of beneficiaries; (i) rural and peri-urban households with means of collecting rainwater for watering household gardens, (ii) small scale irrigators with between 0.2 to 1 ha of irrigable land using simple technologies, and finally (iii) medium to large scale commercial farmers or farmer groups operating in viable blocks of minimum 20ha, mainly in the field of horticulture.

II.8. The number of rural household in Lesotho is estimated at 336,000 of whom 224,105 are in the four focal district of the project. The average size of arable areas around the home is between 250 and 500 m² that these household may use to grow vegetables. The project targets about 5 000 of these household with assistance for roof harvesting and another 5,000 with surface ponds primarily for demonstration purposes. The irrigation component targets areas where irrigation will be determined to be technically viable.

II.9. **Institutions.** The MAFS is responsible for irrigation all over the country. The MNR is over all responsible for management of water resources which include allocation of water under the Water Resources Act of 1978. In the framework of integrated water resources management the ministry’s *Water Commission* and the *Directorate (Department of Water Resources)* promotes a multi-purpose approach to planning of resources which implies consideration of irrigation needs in the other programmes of water supply.

II.10. In the private sector a number representatives of manufactures of irrigation equipment are present in Lesotho and do on occasions render advisory services to farmers. Small commercial irrigators have only recently started to emerge.

II.11. A number of NGOs provide assistance to small farmers in the area of irrigation. The most significant of these are *World Vision (WV)* and *CARE*. The form of assistance provided is primarily in the form of finance and advisory services.

III. PROJECT RATIONALE

III.1. The *Agricultural Sector Strategy (AgSeSt)* recognises water control as one the most important of factors that have an importance in its implementation. Rainfall is not considered a constraint per se but its spatial and temporal distribution presents the challenge for irrigation. Given the hilly terrain of much of Lesotho the challenge to moisture management rests not just with being able to apply conventional irrigation but also to manage run-off (which in addition contributes to erosion and loss of fertility) and to induce infiltration and soil retention of the moisture.

III.2. In the light of these circumstances the government has concluded that development of irrigation, water harvesting and soil moisture management through conservation farming hold the hope of development of crop production.

III.3. The government has decided to abide by the reluctance of farmers to work in cooperatives in the large schemes, and develop mainly micro-scale irrigation for the small farmers while encouraging the growth of commercial irrigated farming among willing and capable farmers.

III.4. The presently proposed project/programme is intended to address the failures of past attempts at water control through large scale irrigation and of poor land husbandry practises that led to

decline in soil fertility. It aims instead to improve overall agricultural land productivity under a variety of agro-climatic as well as social conditions of farmers and farming systems by applying solutions appropriate to the specific situation. It adapts a wide range of technical solutions from well established conventional systems to innovations and adaptations that have been pioneered in many parts of the developing world and piloted in earlier and on-going projects in Lesotho such as the *Special Programme for Food Security (SPFS)*.

IV. PROJECT OBJECTIVES

IV.1. The *specific objective* of the project in relation to the water harvesting and irrigation part of the programme is to improve overall agricultural land productivity through harnessing of run-off and application of rainwater in the form of irrigation and through holistic soil moisture management by trained and capable farmers supported by equally empowered extension staff.

IV.2. Irrigation sub-objectives are:

- To introduce and promote rainwater and runoff harvesting technologies at both household garden and open field levels as sources of moisture in between rains;
- To increase the extent of irrigation through the use of low cost technologies among farmers and groups of small farmers and conventional irrigation for medium scale farmers;
- To promote land improvement, improved tillage and management of soil structure and texture as methods of management of soil moisture;
- To build the capacity of beneficiary farmers and supporting extension staff to manage irrigation systems and to maintain irrigation equipment; and
- To complement the *Crop Production Programme* through the provision of infrastructure.

V. PROJECT DESCRIPTION

V.1. The project would build upon the experiences of the completed as well as on-going innovative projects piloting the use of appropriate sustainable technologies to improve overall soil moisture management in a holistic manner. The project consists of the following *four irrigation components* in the form of output and activities:

- Rainwater and run-off harvesting;
- Small scale irrigation;
- Medium to large scale commercial irrigation;
- Land improvement; and
- Capacity Building and Support Services.

A. Components

Component 1: Rainwater and Run-off Water Harvesting

V.2. Households in Lesotho often dispose of land around the home in the form of garden of between 250 m² to 500 m² (1/16 to 1/8 of an acre) in area that can be cropped intensively using low input systems as well as facilities to store water towards the end of the summer for growing through the winter and into the early part of spring. Project assistance to these households would be in the form of training, soft credit for inputs and supervision of construction of these structures.

- ***Roof water harvesting:*** Landless farming households, and those without access to irrigable land wishing to take advantage of impermeable surfaces around the home, will obtain assistance in the form of training and supervision to construct roof gutters and masonry reservoirs to collect roof-water to use on the home garden. A total of 5,000 such households is targeted with reservoirs of average 4 m³ capacity.
- ***Rainwater collection in ponds:*** Alternative these household may construct a surface pond to harness water from adjoining land to use in the garden. This type of storage may also be used for rearing ducks. Household ponds used to be widespread in Lesotho in the recent past and the project will renew interest in these as well as improve the design to avoid rapid siltation and reduce seepage losses through stabilisation. Another 5,000 household would be assisted to constructs ponds of 10 m³ capacity
- ***Conservation type dams:*** The third type of water harvesting is for use on land far from homesteads. In the past earth dams have been built on ephemeral channels primarily to retard water flow to reduce soil erosion. These together with new similar structures will be built under the project. where feasible, to provide water for irrigation. The method of irrigation shall be as describe below for small scale irrigation. A total of 60 such dams with capacity ranging from 20,000 to 100,000 m³ is envisaged.

Component 2: Small-scale Irrigation

V.3. The project will upscale a number of on-going innovations in the use of small scale irrigation by farmers either individually or in small groups. Where beneficiaries are small groups the government’s policy based on past experience is clear that the individual farm family will remain responsible for cropping on their field. The group will manage the communally owned part of the system such as the delivery pipe. The group will need to agree on scheduling of irrigation as necessary.

V.4. So as to permit the inclusion of the landless in these schemes an effort will be made to encourage these in addition to providing non-family labour to own mobile plant and equipment for leasing or contracting to those with irrigable land.

V.5. The following main categories of systems will be applied:

- ***Spring- or stream-fed gravity systems:*** Especially in the highlands and foothill zones the systems include a spring collection box, or diversion weir at a location to permit adequate head to drive a low head sprinkler or drip system. Theses systems have the main advantage of not using pumps with their maintenance problems. However, regular inspection and control of water feed and safely lead away excess water. It is intended to assist farmers to cover some 1,500 ha in plots of average 2 ha.

- **Manual pumping from adjacent streams or shallow wells or boreholes:** The use of hand pumps from boreholes is now common place in rural drinking water supply in Lesotho. The project will apply lessons from the on-going SADPMA and SPFS to the use of treadle pump and hand pumps to lift water from adjacent streams or closely located borehole and applied through low head sprinklers and or drip systems. A smaller coverage of 500 ha is envisaged in this category.
- **Small diesel operated pumped systems:** Where area to be irrigated does not permit manual systems above diesel pumps of up to 7.5 kW will be used to drive suitable designed pumps lifting water to small storage tanks to distribution. Such systems will permit the use of higher head sprinklers systems. A further 500 ha is envisaged under this higher technology category.

Component 3: Medium to Large Scale Commercial Irrigation

V.6. A number of farmers have shown keen interest to farm on a larger scale than the small scale technologies above. Under the current system of land tenure these farmers will need to negotiate lease of land from families with contiguous pieces who lack the resources to develop. Under current practise these farmers have often devised ways in which the families can continue to participate albeit in a sub-ordinate role in the operation. Alternatively groups of farmers who can jointly raise the equity capital to develop this scale will be assisted in a manner similar to the commercial farmers.

V.7. The project target is to bring back previously irrigated 2,500 ha under this component and to add a further 500 ha by the end of the project period. This would bring to 5,500 ha the total irrigated land under the project.

Component 4: Land Improvement

V.8. Areas of land with fertility comparable to irrigable land, but located too far from viable sources of water may yet benefit from design of area drainage in the form of “spread and sink” water conservation structures aimed at improving the soil uptake of soil moisture. The land improvement component will address both this issue and the problem of compacted soils as well as the need for land levelling for some forms of irrigation.

V.9. Project assistance to farmers in this case will include a one-off hire of earth moving and deep tillage equipment for this, incorporating of organic manure and lime along the rip-line, construction of the water conservation structures. Some local NGOs have pioneered the use of the key-line method of run-off management from Australia while rip-line technology was demonstrated to have positive results under *Soil and Water Conservation and Agro-forestry Project (SWACAP)* but had a low adoption rate among farmers.

V.10. The land improvement project will cover the 180,000 ha of land of which 150,000 will be in Maseru and the three northern districts covered by the *Crop Production Programme*. This area coverage can be scaled up or down according to availability of funding.

Component 5: Capacity Building and Support Services

V.11. The project will train both the participating farmers and the extension support staff, first during the design and implementation stages through high level of participation in all key processes and interaction with suppliers and implementing contractors. Towards completion addition training

will also be provided to ensure ability to operate and maintain the irrigation system to apply good husbandry practices and to manage the overall production and marketing process.

- **Capacity for beneficiary farmers:** The project will assess the indigenous knowledge of the farmers with regard to production of appropriate crops for their given AEZ, and build on it to introduce technology change required to attain and sustain higher levels of production. Training will in addition focus on undertaking regular inspection of equipment and machinery, doing routine maintenance and acquiring services of external private sector providers for more advanced maintenance. The project will train farmers concerning maintenance of farm records, basic business management skills including final marketing of produce.
- **Capacity of support staff:** District extension staff in Resource Centres and District and National HQ will be trained based on a *Training Need Assessment* (TNA) to be conducted in the early stages of the project. The main objective of the training is to facilitate the staff to respond to queries and demand for support from the beneficiary farmers.

V.12. Part of the assistance at RC and District Level will be provision of basic infrastructure to facilitate staff to access web content and interpret it to farmers especially on issues related to market of inputs and for outputs, and to communicate with other stakeholders through electronic mail. The costs are included in the Support Services Project.

B. Activities

V.13. Working within the participatory action learning approach of the UES, generic activities common to all outputs are:

- Identify the irrigable areas where communities and farmers express interest and demand for assistance;
- Conduct PRAs aimed at obtaining commitment;
- Conduct participatory planning and design of the feasible option for the location;
- Obtain funding approval for the community sub project;
- Procure services of supporting NGOs, TAs, and goods and construction; and
- Undertake participatory monitoring and evaluation up to project closure.

VI. ESTIMATED PROJECT COSTS

VI.1. The estimated total cost for the irrigation components of the programme are shown below. The estimates of scope are formulated on the basis of available irrigable area and the expected rate of acceptance by farmers in the identified areas in accordance with the demand led approach. The unit rates are averages for similar work in on-going projects, Physical contingencies at this stage have been estimated at 10 percent across the board. Price contingencies have been estimated over the five year implementation period at 3 percent p.a.

Component	Quantity	Unit	Maloti		US\$'000			%FE
			Unit Cost	Total Cost	Foreign Exchange	Local Currency	Total	
1. Water Harvesting								
Roof water gutters and tank	5,000	household	3,000	15,000,000	2,035.7	107.1	2,142.9	95
Garden surface pond	5,000	household	1,000	5,000,000	357.1	357.1	714.3	50
Small earth dams	60	No.	500,000	30,000,000	3,214.3	1,071.4	4,285.7	75
2. Small Scale Irrigation								
Spring- and stream-fed gravity systems	1,500	ha	17,500	26,250,000	3,000.0	750.0	3,750.0	80
Manual lifting systems	500	No.	3,500	1,750,000	225.0	25.0	250.0	90
Motorized pumping systems	500	No.	14,000	7,000,000	900.0	100.0	1,000.0	90
3. Medium to Large Scale Irrigation	3,000	No.	70,000	210,000,000	24,000.0	6,000.0	30,000.0	80
4. Land Improvement	180,000	ha	500	90,000,000	10,285.7	2,571.4	12,857.1	80
5. Capacity Building				5,000,000	428.6	285.7	714.3	60
Total Base Cost					44,446.4	11,267.9	55,714.3	
Physical Contingencies					4,444.6	1,126.8	5,571.4	80
Prices Contingencies					3,022.8	766.3	3,789.1	
Total Project Cost					51,913.9	13,161.0	65,074.8	

Exchange rate: 1 US\$ = 7 Lesotho Maloti.

VII. PROPOSED SOURCES OF FINANCING

VII.1. The indicative financing plan is shown in Table 2 below and on the information sheet at the front of this report. **Beneficiary** farmers will contribute the unskilled labour such as the collection of local materials, (sand and stone) for construction of water tanks and surface ponds in the home garden components. They will also provide labour in respect of in-field work of land preparation as well as excavation and laying of transmission of pipes This constitutes the bulk of the local cost component of these components.

VII.2. The local **private sector**, being both the commercial farmers and the local financing institutions will provide equity and credit respectively in the micro irrigation schemes. Since local credit is usually short term it will be used primarily for working capital. The long term credit, repayable over up to five years will be provided under the Credit component of the *Support Services Project* in the NMTIP.

VII.3. The **government** will contribute up to 10 percent of the total project costs. These costs will be in the form of overhead costs of staff involved in the implementation of the project, as well as the running costs incurred in local currency.

VII.4. External funds from **development partners** (donors) will be used to finance the rest of the project including credit extended to medium to large farmers for land improvement and mechanisation. In past and on-going projects, a number of donors have and continue to finance similar components. Among these may be mention two bilateral, British DFID and the Japanese Government. Among multi-laterals the FAO, IFAD, IDA and ADB may be approached.

Source	US\$ million	% of total
Government	6.5	10
Financial Institution(s)	48.8	75
Beneficiaries	3.2	5
Private Sector	6.5	10
Total	65.0	100

VIII. PROJECT BENEFITS

VIII.1. The main beneficiaries are the farmers who will receive direct assistance as indicated in the project description. The benefits derived fall into the following broad categories:

VIII.2. **Technical, Financial and Economic Benefits.** Water management will increase overall land productivity where water is the limiting constraint. In areas with perennial streams which occur close to the larger rivers in the Lowlands of Lesotho and from springs in the Foothills and Mountains, it is possible to begin planting summer crops even if the rains are delayed. Farmers with such a facility have an opportunity to cash on favourable prices of especially vegetables. In a similar manner where irrigation is possible with appropriate crops the planting season can be extended into the winter period (beyond the end of the rainy season in mid-May) when rainfall is at its lowest.

VIII.3. Thus in a nutshell water management will increase production through (a) better plant moisture performance due to removal of the risk of water stress (b) a higher cropping intensity made possible by extension of cropping season allowing multiple crops, and (c) through optimisation of inputs and (d) finally through facilitating the shift to higher value crops and commercial production as a whole.

VIII.4. **Social and Institutional Benefits and Impacts.** Social benefits of the projects are many. First, from the gender point of view increased focus on home gardens will especially benefit women who tend in general to be responsible for operations at this level as compared to fields where the male household head is responsible.

VIII.5. Increased incomes from irrigated farming may be expected to reduce the tendency to migrate even temporarily to towns, although at a local level some labour movement to areas of higher potential may occur. Overall increase in food production and incomes of household should contribute to high social stability and increase esteem among members of benefiting communities. Through the extension effort under the project, it is expected that community cohesion will improve from joint learning and action and that farmer association created will undertake other projects beyond irrigation.

VIII.6. **Environmental Impacts.** Impacts assessments will be made in more detail prior to finalization. Under the conditions prevailing given the favourable climate free from malaria and bilharzias, even occasional ponding due to excessive application of water is not expected to have negative impacts. Increased use of chemical fertilizers among commercial farmers might occur leading to eutrophication of water courses much later in the project but is very unlikely at present.

VIII.7. The environmental merit of the project is its small scale. The small size of dams envisaged will reduce the risk of flooding of useful land, and most likely no homes will be affected. In general the improved nutrition status in the project area will have a net positive environmental health effect.

IX. IMPLEMENTATION ARRANGEMENTS

IX.1. The MAFS will be the Executing Agency of the *Crop Production Programme/Project* through its *Crops Department* within which the *Irrigation Division* will oversee the implementation of the irrigation components. Since construction of small and medium dams is the responsibility of the MFLR, MAFS will delegate the implementation of this component to MFLR while maintaining overall responsibility as the Executing Agency.

IX.2. The Principal Secretary of MAFS shall chair an *Inter–Ministerial Steering Committee* (IMSC) composed of representatives of the *Ministry of Finance* (MoF), MFLR, MNR and the *National Environmental Secretariat* (NES). The IMSC shall meet at least once a year to review and approve the *Annual Work Programme and Budget* (AWPB) and the *Audited Accounts and Progress Reports*. It shall also convene as required to consider emergent cross–sectoral and policy issues.

IX.3. The Director of MAFS’s *Department of Planning and Policy Analysis* (DPPA) will establish a liaison office to deal with external stakeholders and chair a *Project Management Committee* (PMC) consisting of departmental directors of the ministry and *District Agricultural Officers* of the project areas. The management committee shall meet quarterly to consider the quarterly financial and physical progress report.

IX.4. There will be a *Project Coordination Unit* (PCU) consisting of a *Project Coordinator* (PC) a Project Accountant and a *Monitoring and Evaluation* (M&E) Officer. The PCU shall liaise with the other departments to ensure the project works are incorporated in the annual work programmes of these departments in the annual planning and budgeting process, in a manner that will permit the targeted rate of execution and funds disbursement. It shall furthermore procure goods and services required for implementation at the central level as appropriate.

IX.5. Day to day implementation shall be the responsibility of the *District Agricultural Officers* in accordance with the UES. The communities and farmer groups in the targeted areas will indicate their requirements for assistance in the framework of the UES, and begin negotiations for funding from the project.

IX.6. The administration of credit for purposes of the project will be undertaken by a designated financial intermediary assessed to have the capability. Under the *Support Services Project* it is proposed that there shall be established an *Agricultural Development Credit and Finance Fund* to serve this purpose.

IX.7. When agreement is reached on the scope of work mode of implementation work shall begin. The farmer groups will provide the first line of action in monitoring and evaluation which will be reinforced and consolidated at the resource centre, the district office and finally presented to the Ministry. The *M&E Officer* shall consequently work hand in hand with the *Department of Field Services* to ensure that the process is truly participatory.

IX.8. Other stakeholders to be involved in the project will include interested NGOs and CBOs as well private consultants and contractors who will be invited to submit bids to execute some of the project activities.

X. TECHNICAL ASSISTANCE (TA) REQUIREMENTS

X.1. It is expected that the project would tap the resources of the TA provided under the Indian Government bilateral programme in backstopping the technical aspects and strengthening the capacity of the ministry. However on short-term basis the Ministry will recruit local and foreign consultants for specialised inputs in the project on a need basis.

XI. ISSUES AND PROPOSED ACTIONS

XI.1. Further work is required to complete preparation of the project. The scope of work in terms of selection of locations to be included, more detailed designs of works and detailed costs, standard designs/specifications for household systems and regular work components.

XI.2. Detailed implementation procedures require decisions to be taken regarding, roles for the individual and farmer groups in each category, mechanisms for “privatisation” of equipment installed in the dormant irrigation systems, arrangements on-lending project funds under the credit component.

XII. POSSIBLE RISKS

XII.1. Past experience in similar projects permits a prediction of likely unfavourable circumstance which requires to be taken into account in the design of project. Some of these risks have especially been identified in the stakeholder validation workshop:

XII.2. **Delays in implementing complementary activities.** The single most important risk to success of the project is common to all development efforts. Stakeholders are unanimous that unless complementary measures are undertaken in tandem the project efforts will be brought to nought. Most specifically implementation of measures relating to improvement in the marketing are considered crucial. Lack of storage, transport and access to markets and now more importantly advance information on demand and supply will continue to discourage farmers to take the risk associated with investment in crop production especially with irrigation and its implied high costs.

XII.3. To address this question where a project is likely to proceed ahead of funding of complementary inputs additional components should be include to address this issues at least at a local level.

XII.4. **Vandalism from those excluded from benefits.** There is an indication that the observed cases of vandalism and theft of equipment and produce from present efforts in irrigation may in part be due to a sentiment of being excluded among the land less or those farmers outside the irrigable zone. It is thus important that special provision is made for all community members to have a chance of sharing benefits for the project. Beyond opportunities of being employed as labour by neighbours the landless could be given the opportunity to own and therefore lease some of the equipment to irrigating farmers as has been done successful in a project in Bangladesh. Those without the possibility of irrigating should have the opportunity of owning storage areas, supplying inputs and transporting output to markets.

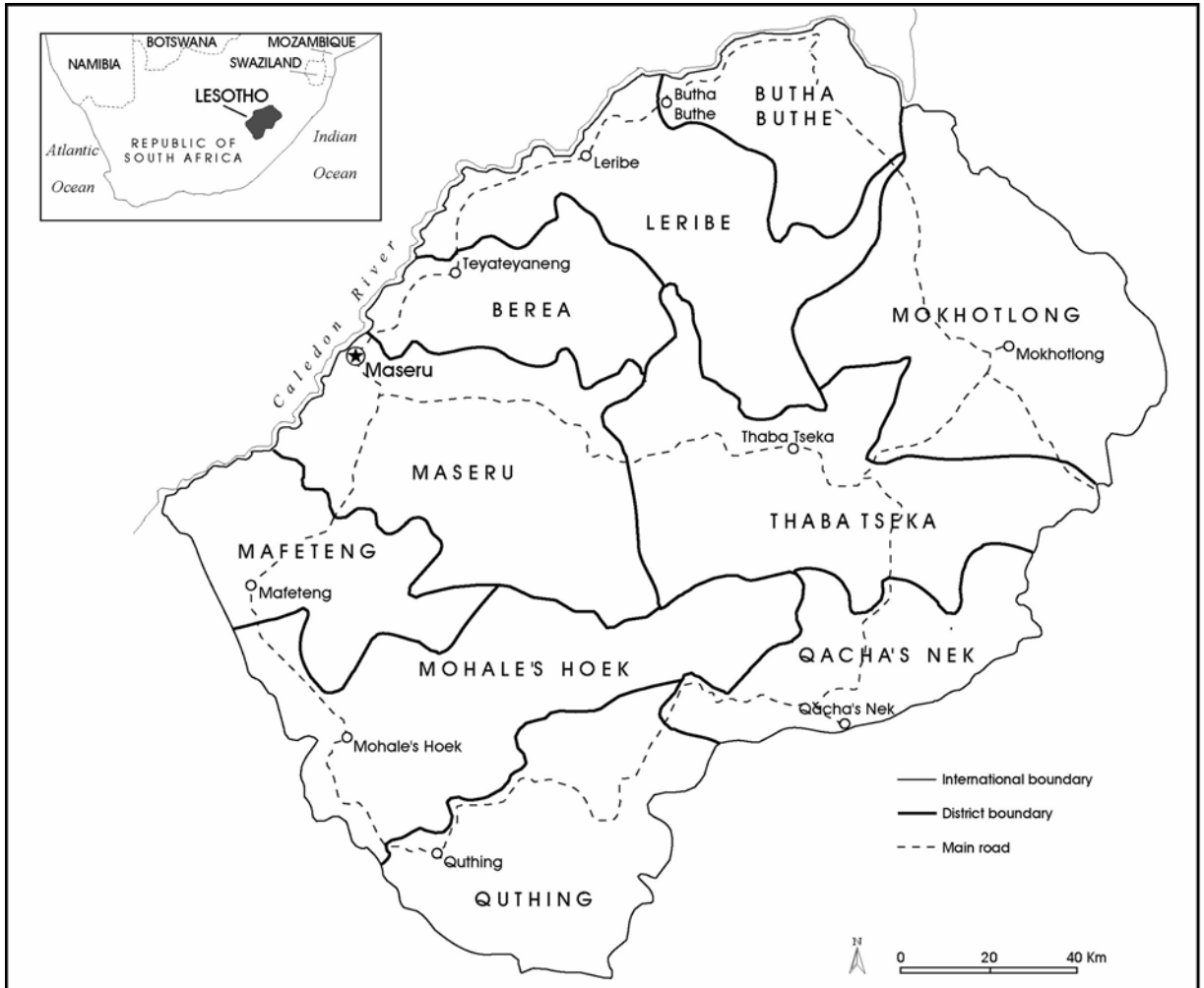
XII.5. **Reluctance of farmers to lease land to commercial producers.** To make the transition to commercial farming one route would be to convert the subsistence farmer of today to a commercial. While this should be the long term goal, the more direct route is to allow capable farmers to lease

contiguous land from existing land holders. The project design should provide enough incentives for holders to voluntarily lease out this land on a long term basis.

XII.6. ***Free rider attitudes among former beneficiaries of subsidized production.*** There is also an indication that farmers who have previously benefited from subsidised production in the past continue to expect this in the present and may continue into the future. Extension work within the programme and consistent application of policy are necessary to effect the behaviour change required.

XII.7. ***Water rights and conflict.*** There is a risk especially in the upper reaches of catchments that irrigation water may not be enough for all possible users in the irrigable area thus presenting a challenge on the allocation of these resources. A recent report of a reconnaissance mission of the Ministry of Forestry indicates that one such case has already occurred. This implies a need to consult with the Commissioner for Water to assess the amount of resource available and allocate withdrawal rights to different users prior to them making expensive investments.

Appendix: Map of Lesotho



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