



## High-Level Conference on:

### Water for Agriculture and Energy in Africa: the Challenges of Climate Change

Sirte, Libyan Arab Jamahiriya, 15-17 December 2008

## National Investment Brief

### ERITREA

#### EXECUTIVE SUMMARY:

Eritrea is one of the poorest countries in the world, with an average annual per capita income of 248 US\$. About 70 percent of the Eritrean population livelihood relies on agriculture, livestock rearing and fishing. The GDP of the country for 2007 is valued at 1.2 billion US\$, and the percentage share of value added to the GDP by agriculture accounted 17.5% in 2006.

The country portrays a very high level of undernourishment; 61 percent of the population is undernourished (FAO, 2003). Poverty is concentrated in rural areas and is most severe in arid zones. Vulnerable groups include refugee populations such as Eritrean refugees from the Sudan, internally displaced people and expellees from Ethiopia and vulnerable urban populations comprising the very poor, disabled, elderly persons and socially and economically marginalized persons. Domestic food grain production is well below demand and is supplemented through imports. The typical import requirement varies between one-quarter and one-half of demand depending on domestic production.

Eritrea must be viewed as one of the most vulnerable countries in the continent, as is made clear in the National Adaptation Program of Action (NAPA) published in 2007. The prospect of increased variability in rainfall patterns, more frequent drought, and rising sea levels (Eritrea has many low-lying islands) acting on a primitive system of agriculture surely calls for more fundamental investment than the steps of basic good practice identified in the NAPA report.

There are three main drainage systems in Eritrea comprising Mereb-Gash and Tekeze-Setit River systems, draining into the Nile River; and the eastern escarpment and the Barka-Anseba River systems, draining into the Red Sea. The river systems, with a narrow strip of catchments along the south-eastern bordering Ethiopia, are flowing into the Danakil Basin. Based on this water availability estimates of irrigation potential are 187 500 ha, but the total land area developed for irrigation is about 22,000 ha.

Currently there is no hydropower production in Eritrea, though three potential hydropower sites have been identified and studied which include Tekeze river (~ 23000 Gwh per year), Anseba river (~120 Gwh per year), and Setit river (~ 240 Gwh per year).

The development policy and strategy of the country launched with the objective of: (a) meeting the significant urgent humanitarian needs resulting from the recent conflict with Ethiopia and further exacerbated by the severe drought in 2002; (b) redressing the fiscal and monetary imbalances through an austerity budget to reduce the large budget deficit and restrain the inflationary pressure and the further depreciation of the currency; (c) reinvigorating the economy by releasing skilled and unskilled manpower; and (d) restoring the development momentum through the rehabilitation and expansion of economic infrastructure and assisting displaced people resume their economic activities.

The financial envelope for the mid-term strategy is prepared by NEPAD/CAADP is about 64 million US\$. Currently, there are 4 integrated agricultural development project profiles already prepared by NEPAD and FAO (2005) at an estimated cost of ranging from 20 million US\$ to 54 million US\$.

# 1. CONTEXT

## 1.1 AGRICULTURE AND FOOD SECURITY

### Agriculture

Eritrea is one of the poorest countries in the world, with an average annual per capita income of 248 US\$ in 2007. The population of the country for 2005 is estimated at 4.4 million consisting of 79 percent rural population. About 70 percent of the Eritrean population livelihood relies on agriculture, livestock rearing and fishing. The GDP of the country in 2007 is valued at 1.2 billion US\$, and the percentage share of value added to the GDP by agriculture was 17.5% in 2006.

The total cultivable area is estimated at around 1.6 million ha. The total cultivated area was 640 000 ha in 2005, of which 637 000 ha arable land and 3 000 ha permanent crops. The farming system comprises: (i) rainfed crop systems using traditional methods with very low input levels, mainly in the central and southern highlands; (ii) irrigated agriculture systems using mainly spate irrigation in the western and eastern lowlands; (iii) agro-pastoralist and nomadic pastoralist systems, mainly in the lowlands and escarpment zone (agro-pastoralists derive their livelihoods from cattle, sheep and goats, while nomadic pastoralists often keep camels as well).

The country has six agricultural zones defined by climate, altitude, and soils. The agricultural zones comprise *the central highland* with an altitude of over 1,500 m, and annual rainfall of over 500 mm; *the western escarpment*, with an altitude ranging between 600 and 1,500 m, warm to hot semi-arid climate and rainfall up to 500 mm; *the south western lowlands* at an altitude of 600 to 750 m, with annual rainfall in excess of 400 mm, and a hot semi arid climate; *the green belt of the eastern escarpment of the highlands*, ranging in altitude between 750 and over 2,000 m, with rainfall of up to 1,000 mm and, unlike other zones, supporting perennial crops, such as coffee, without irrigation; *the coastal plains* having an altitude that ranges from sea level to 600 m, with Saharan climate and rainfall of less than 200 mm; and *the north-western lowland*, having an altitude ranging from 400 to 1,500m, with hot arid climate and annual rainfall of less than 300 mm.

The main *rainfed crops* are: *cereals* composed of sorghum, pearl millet, barley, wheat, teff and maize; *pulses* composed of chickpea, field pea and horse bean; and *oilseeds* composed of sesame, cottonseed and groundnuts. Grain output reached a peak of about 472,200 metric tons in 1998; it then fell to 341,000, 133,200, 238,000 and 64,000 mt in 1999, 2000, 2001 and 2002, respectively, resulting in heavy food deficits. The estimate for 2003 amounts to about 115,330 mt. The fruit and vegetable production include tomato, onion, peppers, eggplant, okra, banana, papaya, citrus and mango. Fruit and vegetable production in 2002 is estimated to have been about 114,000 and 14,090 mt respectively.

### Irrigation and water control

Estimates of irrigation potential vary from 107,000 ha to 567,000 ha, the latter not taking into account the water availability. Based on water availability, it can be estimated at 187 500 ha. The total land area developed for irrigation is about 22,000 ha, while 12,500 ha is cultivated for producing a variety of high value agricultural crops including fruits, vegetables, and cotton. The potential of spate irrigation is estimated in the order of 90,000ha, but the area equipped for spate irrigation covers 17,490 ha, of which 15,650 ha in the eastern lowlands and 1,840 ha at Alighider on the lower Gash and a small area along the Barka. The traditional technique of spate irrigation depends on the diversion of floods, a resource that is available at irregular and unpredictable intervals. The contribution of the spate irrigation to total crop production can be increased by efficient water management systems.

As reported by Ministry of Agriculture, in 2006 an estimated of 16,800 ha was under perennial irrigation from dams, springs and wells irrigating mainly fruits, vegetables and cotton. Of the total under perennial irrigation about 1,000 is irrigated by pressurized technique mainly drip irrigation. In general the recent trend shows that irrigated lands through out the country are significantly increased during the last 15 years. In the highlands small scale community irrigation downstream of existing small dams and using wells has expanded due to government and partners' project interventions.

The area under spate irrigation covered 51,970 ha (as calculated by data from the Regional offices). In the western lowlands a total of 17 small to medium spate flow diversion structures and three medium

size dams were built and start irrigating in thousands of hectares. In the eastern lowland area under spate irrigation has increased due to the improvement of traditional temporary diversion scheme by constructing permanent diversion structure (eg. Eastern Lowland Wadi Development Project – IFAD Funded).

**Food security**

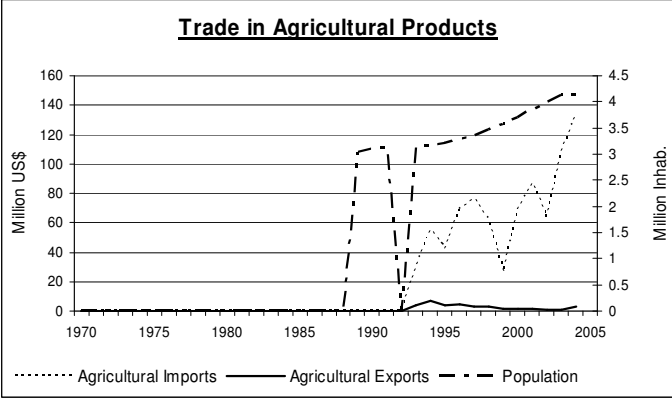
Eritrea is food insecure country, having experienced both chronic food insecurity, resulting from the prevailing high poverty level and overall low development, and acute insecurity triggered by drought and conflict. In the period 2001-2003 the proportion of the population living below the national poverty line was 66% and that of children underweight below five years of age was 44%. Comparing these figures to the 1993-95, the proportion of population below the national poverty increased by 13 percent and the proportion of children underweight was increased by 4 percent. Moreover, Eritrea portrays a very high level of undernourishment; 61 percent of the population is undernourished (FAO, 2003). The situation has not changed significantly from 1993-95 to 1999-2001, the last period available.

Poverty is concentrated in rural areas and is most severe in arid zones. Vulnerable groups include refugee populations such as Eritrean refugees from the Sudan, internally displaced people and expellees from Ethiopia as a result of the border conflict; and vulnerable urban populations comprising the very poor, disabled, elderly persons and socially and economically marginalized (war and/or drought-affected) persons. Domestic food grain production is well below demand and is supplemented through imports. The typical import requirement varies between one-quarter and one-half of demand depending on domestic production. With current production and import trends it is clear there is a large shortfall and hence serious food insecurity by those without access or income to purchase food.

**Food and agriculture trade and import balance**

Eritrea’s economy in general and the agricultural sector in particular have been seriously affected by the combination of war, recurrent droughts and degraded lands.

The food import bill in the country has significantly increased (see figure below), putting a substantial burden on the country’s foreign exchange resources. The food import bill trend in recent years increased, from mean value of around 50 million US\$ in the period 1993-1996 to over 92 million US \$ in the period 200-2004. Cereals are contributing to the largest share of the bill, consisting of 64%, and, in particular, wheat alone accounts 43% of the total.



Imports generally remain high even in good years; for example, despite 1998 being a year of good rainfall, national import requirements were nearly 200,000 tons or 30.5 percent of consumption. Food aid delivery to Eritrea between 1992 and 2000 is estimated to have been, on the average, about 120,000 tons per annum; in 2001, 2002 and 2003 it was 198,200 tons, 70,000 tons and 318,500 tons respectively. The total national food requirement of the country for 2004 is estimated to be about 614,000 tons with a food aid requirement estimated at 443,000 tons.

The total exports in 2007 are valued at 68.2 million US\$, which include mainly skins, meat, live sheep/cattle, and gum arabica. Where as, the import for the same year is valued at 567 million US\$.

## **1.2 WATER RESOURCES AND HYDROPOWER**

Eritrea has three main drainage systems. These are the Mereb-Gash and Tekeze-Setit River systems, draining into the Nile River; the eastern escarpment and the Barka-Anseba River systems, draining into the Red Sea; and the river systems of a narrow strip of land along the south-eastern direction bordering Ethiopia, draining into the closed Danakil Basin. Although no measurement of runoff is available, the internally produced renewable water resources are estimated at around 2.8 km<sup>3</sup>/yr (over 44% of total actual renewable resources), most of which are located in the western part of the country. There is only one perennial river, the Setit River, which flows along the borderline of Ethiopia. All other rivers are seasonal and contain water only after rainfall and are dry for the rest of the year. There are no natural fresh surface water bodies in the country, but artificially dammed water bodies are found here and there in the highland parts of the country.

Currently there are about 187 dams with a capacity of over 50 000 m<sup>3</sup> each. About 42 percent are for domestic use and irrigation, 40 percent for domestic use only, 13 percent for irrigation, and 5 percent are not used. The total capacity reaches 94 million m<sup>3</sup>. Groundwater is the basis of domestic water supply. The most important group of aquifers is the unconsolidated deposits of alluvial, which exists particularly along the bedding of the Barka-Anseba, Gash and Setit Rivers. Total water withdrawal was estimated at 582 million m<sup>3</sup> in 2004, of which 550 million m<sup>3</sup> for agriculture (94.5 percent), 31 million m<sup>3</sup> for domestic consumption (5.3 percent) and 1 million m<sup>3</sup> for industry (0.2 percent).

Three potential hydropower sites have been identified and studied (Ad Dankers, 1997), which include Tekeze river (~ 23000 Gwh per year), Anseba river (~120 Gwh per year), and Setit river (~ 240 Gwh per year). Other potential sites for micro and mini hydropower have yet to be studied. In general, although the cost of running a hydro power plant is very low, they are however more capital intensive than the thermal power generation systems common in Eritrea. Currently, therefore, electricity generation is restricted to thermal plants. The country generates 60 MW using diesel-fired power generation. Electricity is only available in larger cities and towns, leaving about 80% of the Eritrean population without access to electricity. Some smaller villages have community diesel generators which can provide small amounts of electricity to households. Photovoltaic (PV) electricity generation is being used in special applications throughout the country.

## **1.3 CLIMATE CHANGE**

Eritrea fits in the semi arid and arid region of the continent, which suffers from insufficient and unreliable rainfall in occurrence and in distribution. This makes Eritrea one of the most vulnerable countries in the continent, as is made clear in the National Adaptation Programme of Action (NAPA) published in 2007. The prospect of increased variability in rainfall patterns, more frequent drought, and rising sea levels (Eritrea has many low-lying islands) acting on a primitive system of agriculture surely calls for more fundamental investment than the steps of basic good practice identified in the NAPA report. Pressure on food security and water resources will undermine development strategies for improving education, health services and opportunities for women. Shifting patterns of malaria may jeopardise efforts towards its elimination. The whole pack of cards assembled by the MDGs is built on shaky climate foundations.

Evidence of observational and projected climate change, including variability especially in the frequency of drought in Eritrea is well documented in the country's NAPA (2007) and Initial National Communication (INC, 2001). The occurrences of dry spells and seasonal and multi-year droughts are more frequent and increasingly severe in terms of impacts (animal lost etc). The INC highlights that in the event of a more than likely doubling of global CO<sub>2</sub> levels, mean temperature in Eritrea will rise by 4°C by approximately 2050. Rainfall projections vary, with reductions in lowland regions and increments in highland regions. Resultant impacts will be felt on water resources and agriculture inter-alia. Vulnerability assessments in the Mereb-Gash basin suggest a decrease in runoff by 29.5% (relative to baseline conditions). The resultant impacts on the livestock production system and irrigation development will worsen and compound pressures brought about by high evapotranspiration rates such as diminishing soil moisture. These changes will hasten the decrease in rangeland and agricultural land productivity. This process has already resulted in high levels of household food insecurity, malnutrition, dependence on food aid and the exodus of rural populations into urban centers in search of alternative sources of income.

## 2 NATIONAL STRATEGIES FOR WATER, AGRICULTURE AND ENERGY

### 2.1 POLICY CONTEXT

The government's priorities are to (i) ensure security – including food security; (ii) develop human resources and (iii) develop physical infrastructure. The government's economic strategy is to manage the macroeconomic imbalances using price controls and regulations, and until such time the security situation allows a transition to a more market-based economy. In the meantime, the government has established the Free Zone at Massawa port to encourage domestic investment.

The overall national development policy and strategy of the country was initially articulated in the *Macro Policy Paper* which was issued in 1994 and has been subsequently elaborated in the *National Economic Policy Framework and Programme* (NEPPF, 1998) and the *Transitional Economic Growth and Poverty Reduction Strategy* (TEGPRS, 2001). Four strategy papers with interlinked objectives have recently been issued: (a) the *Transitional Strategy* (TS, 2003); (b) the *Medium-Term Strategy* (MTS, 2004–2006); (c) the *Interim Poverty Reduction Strategy Paper* (I-PRSP, Draft 2003); and (d) the *Food Security Strategy Paper* (FSSP, Draft 2003).

The *TS* was launched with the objective of: (a) meeting the significant urgent humanitarian needs resulting from the recent conflict with Ethiopia and further exacerbated by the severe drought in 2002; (b) redressing the fiscal and monetary imbalances through an austerity budget to reduce the large budget deficit and restrain the inflationary pressure and the further depreciation of the currency; (c) reinvigorating the economy by releasing skilled and unskilled manpower; and (d) restoring the development momentum through the rehabilitation and expansion of economic infrastructure and assisting displaced people resume their economic activities.

The *MTS* is a continuum of the transition period; its objectives comprise: achieving macroeconomic stability and growth (attaining, by end of 2006, a real GDP growth of 5 percent and an inflation rate of 8–10 percent, a budget deficit and current account deficit – including official transfer of about 10 percent and 20 percent of GDP respectively, and official free reserves equivalent to five months of import); attracting private sector investment and expanding exports; and ensuring food security.

The *I-PRSP* represents the Government's response to the urgent need to reduce the incidence of poverty. One of the pillars that constitute the basis of this strategy is that of creating income-generating opportunities for the poor, thereby improving agricultural production, productivity and profitability. The Interim PRS also details priorities for agriculture and rural development and proposes to focus efforts on enlarging the cultivated area in the lowlands and improving productivity through water harvesting, watershed management, catchment rehabilitation and soil conservation.

The government has a Food Security Strategy developed in 2003 and subsequently updated in 2006. The *National Food Security Strategy* rests on three pillars including raising or increasing agricultural production and productivity and improving marketing of agricultural output; improving national capacity to import food, keeping adequate strategic reserve; and using international food assistance more efficiently and effectively, as a measure of last resort during emergencies. Likewise, the *Household Food Security Strategy* encompasses increasing domestic production and farm income; ensuring access to food or enhancing household purchasing power; and promoting a targeted public assistance program including food for the vulnerable and very poor.

The Government of Eritrea emphasized that access to sustainable sources energy by the poor is necessary and critical input for poverty alleviation and sustainable human development. The primary objective in the energy sector is to develop an efficient and environmentally sound and dependable energy production and supply system, capable of supporting Eritrea's growing economy in affordable and sustainable way, thus contributing to raising the quality of life of the people.

Regarding water, the *Draft National Water Policy Framework (1997)* was still not officially adopted in 2003. A recent effort to formulate water policies and strategic approaches is the report titled "Planning, management & advocacy tools for rural water resources development", which is the result of an inter-ministerial workshop in Asmara. This framework defines the following policy objectives:

- Provision of safe, adequate and accessible water for all;
- Improved coverage of appropriate sanitation in both urban and rural areas;

- Integrated management and fair allocation of the available water resources to meet the needs of all sectors of the population;
- Assessment, conservation, regulated utilization and quality protection (that is, maintenance or enhancement) of all water resources, and also the mitigation of water-related hazards;
- Economically and environmentally sound and sustainable water resources development, according to a prioritized schedule.

The **Draft Water Law**, in preparation since 1996, was still to be finalized and adopted in 2003. No formal legislation and no formal system of permits or licenses are in place and local traditional customs prevail. For example, the communities affected by water shortage have the right to benefit from an available supply in their nearest neighborhood. In principle, water is public property and controlled by the government. However, national or regional plans do not exist and the ground rules for the actual water allocation are not clearly defined. Because of the lack of a promulgated, effective water law, activities in the water sector are still uncoordinated.

Although *climate change* is believed to have affected many aspects of social and economic life at global, regional and country levels since the start of the industrial revolution, the formulation of global and national policies to mitigate the adverse effects of climate change is probably less than 10 years old. Eritrea formally joined global efforts to mitigate climate change when it acceded to the UNFCCC on 25 March 1995. Although the environmental policies and measures constituted thus far many not have specifically addressed climate change as such, these policies, in one way or the other, touch upon climate change issues.

The sufficient, reliable and sustainable production and supply of affordable energy throughout Eritrea is the main objective of the *Government's policy in the energy sector* (MEM, 1997). The general policy is to provide the energy services based on a diversified supply of energy sources. The specific objectives of this policy are twofold: firstly, to facilitate the economic growth through the provision of adequate, reliable and sustainable refined energy at an economic price and appropriate locations; secondly, the policy is aimed at improving the living standards of the population through the provision of affordable energy. This policy incorporates the management of energy production, distribution and utilization as well as the promotional and regulatory activities for energy conservation measures. The implementation of the policy must be mindful of the desire to halt, and in some cases, reverse the recent trend in environmental degradation.

## 2.2 INVESTMENT ENVELOPE

The investment envelope for the short, medium and long term is presented in the Table below. The total investment required for the three categories of water structures rehabilitation and development activities amounts to 190 million US\$ in the short, medium and long- term time scale. These figures are based on NEPAD/CAADP investment projections. It is estimated that small scale water control investments, rehabilitation of irrigation schemes, and large scale water projects would cover 105,000ha, 2,000 ha, and 4,000 ha in the same order.

Time scale	Type of investment (million US\$)			Total
	Small scale water control	Rehabilitation of irrigation	Large scale hydraulic projects	
Short-term	62	3	3	<b>68</b>
Medium-term	39	6	19	<b>64</b>
Long-term	20	1	38	<b>59</b>
<b>Total</b>	<b>120</b>	<b>10</b>	<b>60</b>	<b>190</b>

## 2.3 PROJECT PORTFOLIO

Section 3 presents recently achieved, active and pipeline projects related to the above investment envelope. Currently, there are 4 bankable investment projects already prepared with irrigation component that range from US\$21 to US\$54 million for the completion of the projects. Finally, there are 5 recently implemented and ongoing projects involving different donors ranging from US\$6.2 million to US\$20 million.

## 2. PROJECT PROFILES (ON-GOING AND PROJECTED)

Project title	Funding Partners	Lifeline	Total Budget (mill. US\$)	Description
<b>I. PROJECTS RECENTLY IMPLEMENTED</b>				
Eastern lowland wadi development project	IFAD	1996-2005	US\$ 20 million	The major components of the project were: Spate Irrigation development; Community water supply; Agriculture and livestock development; Road construction to the project area; Project coordination.
Central highland irrigated horticulture development Project	AfDB	1996-2005	US\$ 12.68 million	CHIHP was funded by AfDB loan of USD 12.68 million. The project was focused on improving livelihood of small farmers through agriculture intensification base on small irrigation development & expansion and improvement of horticulture production and capacity building.
Strengthening Agricultural Research	FAO/Ministry of Agriculture	2001-2005	US\$ 7.4 million	The project to assist the Ministry of Agriculture develops its institutional capacity for the generation and dissemination of relevant improved agricultural technologies includes: (1) strengthening the human resources capacity of the National Agricultural Research Institute and (2) improving the quality of research services.
<b>II. ON-GOING PROJECTS</b>				
Post-crisis Rural Recovery and Development Programme	IFAD, GEF, Government, Beneficiaries	2006-2011	US\$ 23.2 million	Programme objectives include: (i) Livestock and agriculture development, through promotion of forage production, improved animal husbandry practices, distribution of livestock to vulnerable and very poor families, construction of livestock watering points, and support to rainfed and irrigated farming;(ii) technical support for pastoralists and dryland farmers; (iii) rehabilitation of rangeland and degraded watersheds; (iv) support for development of a leasehold policy on land and water conservation in the highlands; (v) policy support in the area of natural resource management; (vi) natural resource protection investment.
Gash Barka Livestock and Agricultural Development project	IFAD & BSF	2003-2009	US\$ 16.1 million	Under the project, improvements in grazing and farming include establishment of exclusion areas and communal management of rangeland. The project supports infrastructure works such as the building of water points, diversion of rivers and small streams and water harvesting for supplementary irrigation.
Naro irrigated agriculture project	GoE & Africare	2003-2008	US\$ 6.2 million	Weir and irrigation scheme
Program to increase food production for under privileged farmers	Government of Japan		US\$ 30 million	The program is mainly for the procurement of agricultural supplies like fertilizer, agricultural machinery and pesticides. Up to date a total of 27.0 million USD is dispersed and for 2009 about 3.0 million is expected to be approved
<b>III. PIPELINE PROJECTS</b>				
Hazemo Plains Integrated Development Project	FAO-NEPAD	5 years	US\$ 20.89 million	Components: Irrigation Development (38.5%), Drinking Water Supply Development (3.5%), Soil Conservation (7.8%), Horticulture Development ( 4.8%), Livestock Development (31.0%), Socio-economic Infrastructure (6.1%), Research and Expenditure (1.1%), Institutional Support (2.8%), Project Management (2.8%), Technical Assistance (1.7%)
Tseada-Kelay Plains Integrated Development Project	FAO-NEPAD	5 years	US\$ 26.69 million	Irrigation Development ( 54%); Drinking Water Supply Development (6%); Crop Development (1%); Soil Conservation (13%); Socio-economic Infrastructure (5%); Livestock Development (13%); Research and Extension (1%); Institutional Support (2%); Project Coordination (2%); Technical Assistance (2%)
Tsilima Plains Integrated Development Project	FAO-NEPAD	5 years	US\$ 20.12	Irrigation Development (42%); Drinking Water Supply Development (13%); Crop

			million	Development (2%); Soil Conservation (4%); Socio-economic Infrastructure (10%); Livestock Development (16%); Research and Extension (6%); Institutional Support (2%); Project Coordination (3%); Technical Assistance (2%).
Zula plains integrated development project	FAO-NEPAD	5 years	US\$ 54.23 million	Irrigation Development (56%); Drinking Water Supply Development (5%); Crop Development (3%); Soil Conservation (19%); Livestock Development (11%); Socioeconomic infrastructure (1%); Research and Extension (1%); Institutional Support (1%); Project Coordination (2%); Technical Assistance (1%).
Integrated Rural Development Project	European Union (EU)		Euro 70 million	
Sustainable Land Management	GEF co financed by UNDP and Norway		US\$ 4.07 million	The Project is designed for 5 years to undertake pilot activities in the areas of land use planning and tenure system reform, and aims to strengthen institutional and human resource capacity to improve sustainable land management (SLM) planning and implementation.
Food security project	UNDP	2 years	US\$ 1.2 million	The project is designed to expand small scale irrigation through construction of small dams and supporting income generating activities. It is a 2 year project
Climate Change Adaptation project - Kerkebet	GEF Co finance to be determined	5 years	US\$ 3 million	Total budget is expected to increase due to the high investment requirement of the planned irrigated rangeland development. It is a 5 year project and will include capacity building and knowledge management component.

ANNEX  
CONTROL

1:

MAP

OF

WATER



## ANNEX 2: COUNTRY STATISTICS

<b>Country and population</b>								
Area of the country	2005	11760	1000 ha					
Cultivated area as % of the total area of the country	2005	5.4	%					
Total population	2005	4401	1000 inhab					
• of which rural	2005	79	%					
Population economically active in agriculture	2005	1634	1000 inhab					
• as % of total economically active population	2005	76	%					
• female	2005	51	%					
• male	2005	49	%					
<b>Economy and Development</b>								
Gross Domestic Product (GDP) (current US\$)	2007	1201	million US\$/yr					
• value added in agriculture (% of GDP)	2006	17.5	%					
• GDP per capita	2007	248	US\$/yr					
<b>Access to improved drinking water sources</b>								
Total population	2006	60	%					
Urban population	2006	74	%					
Rural population	2006	57	%					
<b>Water Resources and management</b>								
Average precipitation	2007	45.1	10 <sup>9</sup> m <sup>3</sup> /yr					
Total actual renewable water resources	2007	6.3	10 <sup>9</sup> m <sup>3</sup> /yr					
Dependency ratio (transboundary rivers)	2007	55.6	%					
Total actual renewable water resources per inhabitant	2007	1431	m <sup>3</sup> /yr					
Total dam capacity	1998	0.094	10 <sup>9</sup> m <sup>3</sup>					
Total water withdrawal	2004	0.582	10 <sup>9</sup> m <sup>3</sup> /yr					
• as % of total actual renewable water resources	2004	9.24	%					
<b>IRRIGATION AND DRAINAGE</b>								
Irrigation potential	2007	188	1000 ha					
<b>Water Management</b>								
Area equipped for irrigation: full control - total	1993	4.10	1000 ha					
Equipped lowlands	1993	17.49	1000 ha					
<b>Total area equipped for irrigation</b>	1993	21.59	1000 ha					
• Area equipped for irrigation as % of cultivated area	1993	5.5	%					
• Annual increase rate		-	%					
• Power irrigated area as % of area equipped for irrigation		-	%					
• Area actually irrigated as % of area equipped for irrigation	1993	48	%					
Non-equipped cultivated lowlands and flood recession	1993	0.00	1000 ha					
<b>Total agricultural water managed area</b>	1993	21.59	1000 ha					
• Agricultural water managed area: as % of cultivated area	1993	4.3	%					
• Drained cultivated area as % of total cultivated area		-	%					
<b>Typology of irrigation schemes</b>								
Small-scale schemes (<ha)			1000 ha					
Medium-scale schemes (- ha)			1000 ha					
Large-scale schemes (>ha)			1000 ha					
<b>Irrigated crops</b>								
Cotton	1993	1.860	1000 ha					
Other annual crops	1993	4.109	1000 ha					
<b>ENERGY INDICATORS</b>								
Energy Production	2005	0.50	Mtoe					
Net Imports	2005	0.23	Mtoe					
TPES	2005	0.77	Mtoe					
- TPES/Pop	2005	0.18	toe/capita					
- TPES/GDP	2005	1.02	toe/thousand 2000 US\$					
- TPES/GDO (PPP)	2005	0.18	toe/thousand 2000 US\$ PPP					
Electricity Consumption	2005	0.24	TWh					
- EC/Pop	2005	55	kWh/capita					
<b>ENERGY SUPPLY AND CONSUMPTION (2005)*</b>								
	Coal	Gas	Crude oil	Petroleum products	Hydro	Other Renewable & Waste	Others	TOTAL
Production	0	0	0	0	0	500	0	500
Imports	0	0	0	230	0	0	0	230
Exports	0	0	0	0	0	0	0	0
International Marine Bunkers	0	0	0	0	0	0	0	0
Stock Changes	0	0	0	41	0	0	0	41
<b>Total Primary Energy Supply (TPES)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>271</b>	<b>0</b>	<b>500</b>	<b>0</b>	<b>771</b>

\* in thousand tonnes of oil equivalent (ktoe) on a net calorific value basis.

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