



High Level Conference on:

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

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National Investment Brief

GAMBIA

EXECUTIVE SUMMARY:

The Gambia is primarily an agricultural country with 70 percent of the population engaged in the sector, it contributes 22-28 percent of GDP, generates 85 percent of export earnings and two-thirds of household incomes. Despite the high participation, productivity has been stagnant with performance dependent on the amount and distribution of rainfall. The Gambia imports 50 percent of its food requirements, has a high urbanization rate of 51 percent, and a population growth rate of 2.8 percent all of fuel high food consumption. The gap between production and consumption is filled an expanding food import bill exceeding US\$ 40 Million annually for rice-the staple food.

The Gambia is low-lying and vulnerable to climate change risks. It is particularly prone to droughts as shown by rainfall trends and floods with sea level rises. Adaptation strategies have been formulated although response capacities are inadequate. The irrigation potential is 81,000 hectares with the total water controlled area estimated at 15, 319 or 7% of the cultivated area.

Water resources comprise of ground water and surface water. While only about 2,500 ha is irrigated using surface water resources due to limitations of levees and salt intrusion, the deep sand stone aquifer is less exploited as it requires large investments for extractions.

The national development strategy is anchored on the Vision 2020 and the PRSP II to be implemented from 2007-2011. An agriculture and natural resource (ANR) policy has been formulated while an accompanying investment plan is being finalized. The National Medium-Term Investment Programme (NMTIP) has proposed two Bankable Investment Profiles: Natural Resources and Environmental Management Project (NRMP) with an estimated Cost of US\$ 7.58m and the National Programme for Food Security(NPFS) Estimated Cost of US\$ 12.60m, with both proposed to be implemented in two phases.

The financial envelop for investment in the NMTIP is US\$ 20.18 million planned for implementation from 2009. Both BIPPs have irrigation components including water harvesting. There are 7 recent projects, 8 ongoing and 2 in the pipeline funded by 8 different donors.

1. CONTEXT

1.1 AGRICULTURE AND FOOD SECURITY

Agriculture

The Gambia is primarily an agricultural country with 70% of the population depending on agriculture for its food and cash income. The sector contributes about 22-28 percent annually to the Gross Domestic Product (GDP), generates approximately 85% of export earnings and two thirds of household income. The sector continues to experience low productivity and modernisation and remains largely undiversified. This is manifested in high incidence of rural poverty with 80% of the very poor in rural areas, household food insecurity, accelerated rural-urban drift and rapid environmental degradation. The demand for food is growing with the increase in population while agricultural production is falling and now provides less than half the total national requirements.

Crop production is a major agricultural activity with some 250,000 ha annually cultivated out of a total cultivable land of 558,000 ha. The largest area to a single crop is allocated to groundnuts, which occupies almost 45% of the cultivated area mainly in upland fields under rainfed conditions. An average of 120,000 ha of upland are also annually allocated to coarse grains comprising early millet, late millet, maize and sorghum. The main staple crop, rice occupies an average of about 15,000 ha of lowland farms under rainfed and improved technologies.

Agricultural production in The Gambia is primarily a smallholder subsistence activity. The production unit is the *dabada*, which is a semi-autonomous social entity within a compound. In 2006 there were 85,980 *dabadas* with an average size of 14 persons and an average cropped area of less than 3 ha. Overall the primary objective of the *dabada* is the production of household food but cash crops, mainly groundnuts, are also grown. Food crops include cereals (early and late millet, maize and sorghum and rice), groundnuts and horticultural crops. Over 80 per cent of the cereals grown are for home consumption. The majority of rural households have some livestock, which provides crucial income as well as prestige and security for their owners.

Irrigation and water control

The Gambia has an irrigation potential of 80,000 hectare of which the total water-managed area is estimated at 15,319 ha or 7% of the cultivated area. All the area equipped for full or partial control irrigation is surface-irrigated, either with pumped schemes (818 ha or about 38% of the area in 1999) or by employing tidal irrigation (1,331 ha or about 62% of the area). The evolution of irrigation development is presented in Table 2. Irrigation increases output per hectare several folds (a minimum of two crops instead of one rainfed crop in a year), higher productivity due to better results of fertilizer application, and stability in production, as vagaries of weather generally do not affect irrigated agriculture except under very severe conditions.

Food Security

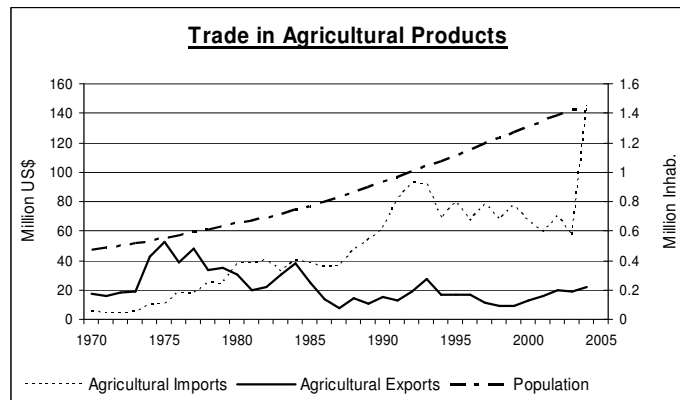
The Gambia is classified among the Least Developed, Low Income Food Deficit Countries (LIFDC) and is currently ranked as 155 out of 177 countries according to UNDP's Human Development Index (HDI) for 2007. Domestic food production only caters for 50 percent of consumption requirements; with the rest filled by imports particularly of rice. Furthermore most producers are net purchasers of food and face food insecurity particularly during the lean period, before harvest, when cash and food stocks are lowest. Consequently, large percentages of the population live below the poverty line and suffer from malnutrition and other health/nutrition related problems. With growing pressure on land and other natural resources, these areas are becoming insecure pockets of poverty. The geographical distribution of poverty is uneven, with poverty being highest in the rural groundnut areas.

Sources of food in The Gambia comprise local production and food imports (commercial and food aid). Local production emanates from field crop, horticulture, livestock and fisheries. The large food consumption and production gap is filled by importation (commercial and food aid). Food insecurity is prevalent in the Gambia and is attributed to low intake in term of both quantity and quality. The low intake is manifested in under-nutrition with resulting malnutrition. Also poverty in the Gambia has been closely linked to food insecurity.

According to the Household Poverty Survey Report of June 2006; 57.9 percent of the population lives in poverty with 39 percent in extreme poverty. In addition about 46 percent of rural households fall below the food poverty line, compared with 15 percent in urban areas and 4 percent in the Greater Banjul Area. Approximately, 91 percent of the extremely poor and 72 percent of the poor are dependent on agriculture for their survival.

Food and agriculture trade and import balance

The Gambia meets half of its food demands through imports. Currently annual rice imports alone exceed 40 Million US Dollars and thus constitute a huge drain on the foreign exchange reserves. The Figure aside provides information on the values of agricultural imports, exports and population from 1970 to 2005. It shows a rapid progression in population during the period from about 0.2 to 1.4 million people, agricultural imports increasing from less than US\$ 20 million in 1970 to above US\$ 140 million in 2004 agricultural exports on the other hand show a stagnating trend with almost the same values as those of the 1970's.



1.2 WATER RESOURCES AND HYDROPOWER

Water resources comprise of ground and surface water. The ground water exists in 2 aquifers systems: (1) a shallow sand aquifer and (2) a deep sand stone aquifer. The shallow sand aquifer occurs at depths of 10-50 meters below the ground level (mbgl) and deep sandstone aquifer is at depth greater than 250 mbgl. The current exploitation of both aquifers is minimal with only few boreholes used for irrigated agriculture. Surface water on the other hand, is principally utilized in Central River Region (CRR) where the river is perennially fresh and used for rice irrigation. Irrigated area has stagnated around 2,500 ha partly because of limitation of steep river banks (requiring pump uplift) and salinization (70 Km at end of rainy season and 250 Km at Kuntaur at end of the dry season) on the westward front and partly because of lack of sustainable irrigation systems.

1.3 CLIMATE CHANGE

The climate is typically "Sudano Sahelian" characterized by a short monomodal rainy season (June to October) followed by a long-dry season (November to May) characterized by the harmattan wind. Although The Gambia is a low emitter of green house gasses, it is very prone to climate change hazards due to the flat nature of the terrain but also to the limited capacity particularly of farmers to adapt to such changes. Assessments have indicated that with sea level rises, the Capital City and most coastal areas will be inundated causing much hardship and economic loss.

Average annual rainfall is about 1,000mm but ranges from 850mm-1,597mm depending on the agro-ecological zone. Figure n°2 shows spatial patterns and temporal changes in rainfall in the last sixty years. The top panel shows a south to south-westerly drift of cumulative July-August-September (JAS) rainfall contours. It could be observed that the area with average rainfall less than 800mm has increased from 36% to 93% since 1965. The bottom panel shows geographical variation of absolute decrease in rainfall. Yundum, Banjul, Kerewan, and Jenoi located westward of longitude 15°30'W (here indicated in world geographic coordinates as -15.5°) have experienced a fall in rainfall exceeding 200mm. Climatological stations to the East of 15°30'W (Kuntaur, Janjangbureh, and Basse) have experienced somewhat smaller changes since 1965. As crop and livestock production is sensitive to moisture, production and productivity have been varying with low rainfall. Its poor distribution in the past decades results in drought conditions which have adversely affected the food production potential.

2. NATIONAL STRATEGIES FOR WATER, AGRICULTURE AND ENERGY

2.1 POLICY CONTEXT

The national development strategy of The Gambia is anchored both on Vision 2020, which aims to transform the country into a middle-income country by 2020, and the Poverty Reduction Strategy Paper (PRSP II), to be implemented from 2007 to 2011. PRSP II is aimed at improving the welfare of all Gambians, and eradicating poverty. It is thus projected that the poverty rate will decline to 40% by the end of the plan period.

PRSP II has five pillars ranging from creating an enabling policy environment to promote growth and reduce poverty to increasing the capacity and outputs of productive sectors such as agriculture, fisheries, and industry. The PRSP II also emphasizes building the productive capacities of the poor, as well as providing the poor and vulnerable populations with increased coverage of basic social services and social protection.

It is against this background that the agriculture sector has also undergone tremendous changes in the past few years. The Department of State for Agriculture (DOSA) and its component agencies was re-organized, resulting in the creation of the National Agricultural Development Agency (NADA) to revitalize the sector. In addition, an agriculture and natural resources (ANR) policy was developed, and an accompanying action plan although it is yet to be formally adopted.

2.2 INVESTMENT ENVELOPE

The investment envelope for the short, medium and long term is presented in the Table below and expressed in million. The Bankable Investment Profile (BIPPS) have a total outlay of US \$ 20.18 million comprising 12.60 US\$ million for the National Programme for Food Security (NPFS) and US\$ 7.58 million for Natural Resources and Environment Management Project(NRMP).

Time scale	Type of investment (million US\$)			
	Small scale water control	Rehabilitation of irrigation	Large scale hydraulic projects	Total
Short-term	23	1	1	25
Medium-term	15	2	5	22
Long-term	7	0	11	19
Total	45	3	18	65

2.3 PROJECT PORTFOLIO

There are 7 recent projects, 12 ongoing and 2 in the pipeline funded by 8 different donors. These are presented below and comprise an estimated US\$ 55 million for recent projects, US\$ 90 million and US\$ 14.5 for pipeline projects. The list of irrigation projects is annexed below.

3. PROJECT PROFILES (ON-GOING AND PROJECTED)

Project title	Funding Partners	Lifeline	Total Budget	Description
I. PROJECTS RECENTLY IMPLEMENTED				
Rural Finance and Community Initiatives Project (RFCIP)	IFAD	1999-2006	US\$ 10.99 Million	Increase food security through rural finance and local initiatives
Lowland Agricultural Development Programme(LADEP)	AfDB, IFAD	2001-2006	US\$ 11.66 Million	Expand rice production to improve food security and welfare
Peri-Urban Smallholder Improvement Project(PSIP)	AfDB	2002-2007	UA 5.7 Million	Increase on a sustainable basis the production, marketing of livestock and horticultural products in Western and North bank regions
Programme for the Increase of Food Production	JICA	1997-2007	US\$ 9 Million	Improve food security through increased area and productivity
Managing water and energy services for poverty eradication in rural Gambia	UNDESA	2004-2006	US\$ 10.8 Million	Construction of boreholes in five villages for water supply and establishing vegetable gardens with the distribution network for irrigation at a total cost of US\$10.8million
II. ON-GOING PROJECTS				
Special Programme for Food Security(SPFS)	FAO, Italy, IDB	1999-2009	US\$ 2.65 million	Increase food security through production of short cycled species of crops and livestock.
Multinational NERICA Rice Dissemination Project	AfDB	2004-2009	UA 3.0 million	Improve food security through increased rice production
Rural Finance Project (RFP)	IFAD	2006-2012	US\$ 8.7 million	Strengthen microfinance institutions to enable them deliver financial services to economically active poor people
Farmer Managed Rice Irrigation Project (FMRIP)	AfDB	2005-2009	5.7 million UA	Facilitate sustainable income improvement and increase rice production
Participatory Integrated Watershed Management Project(PIWAMP)	AfDB, IFAD	2006-2013	16.99 million UA	Reduce rural poverty by increasing total land productivity on a sustainable basis through sound environmental and natural resources management project
Community-Driven Development Project (CDDP)	WB	2005-2009	US\$ 19.0 million	Reduce poverty and enhance the quality of life by mobilizing and empowering communities to undertake activities which livelihood i.e agricultural productivity, diversify farm and off farm income generating activities and support capital social capital formation
Irrigated Rice Development Project(IRRIDEP)	KFAED	2002-2008	US\$ 3.78 million	Increase rice production and productivity in CRRN. Through the development of 1206 hectares of swampland for irrigated rice production.
Gambia Lowland Development Project(GALDEP)	IDB	2007-2011	US\$ 12.71 million	Develop rural infrastructure in Western Region
III. PIPELINE PROJECTS				
Livestock and Horticulture Improvement Project	AfDB	2009-2013	UA 3.6 million	Increase on a sustainable basis the production of horticulture and livestock in North Bank and western regions
Integrated Rural Sector Development Programme	IDB	2008-2010	US\$ 10.0 million	Improve rural welfare through agricultural expansion and improved productivity in the lowlands
Natural Resources and Environmental Management Project	FAO-	5 years	US\$7.58 million	Based on its stated objectives, the Project would be organized

(NREMP)	NEPAD, Government, Private Sector, Beneficiaries			into three components, (1) Strengthen Public Planning and Management of Natural Resources and the Environment; (2) Improve Conservation and Development of Natural Resources, Biodiversity and the Environment, including (<i>rainwater Harvesting and Erosion Control</i>) (3) Project Coordination and Monitoring & Evaluation
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Irrigation: Ongoing Projects

Project Title	Time frame	Funding source	New area to be developed (ha)	Estimated cost of new development(millionUS\$)	Remarks
Peri-Urban Smallholder Improvement Project	2001-2007	AfDB	75	3.4	The horticultural component of this ongoing project aims to provide 75hectares of communal gardens with irrigation infrastructure, among others. Due to implementation delays the component is at the initial stage of implementation.
Irrigated Rice Development Project	2001-2006	KFAED & GOTG	600	3.2	This project aims to develop 1206 hectares of swampland for irrigated rice production. Scheme design is complete and procurement of services for the civil works is currently in progress. However, only 600ha are available for development
Farmer Managed Rice Project	2006-2010	AfDB & GOTG	210	1.1	The project estimated to cost UA6.42million aims to develop 210ha of new scheme and rehabilitate 976ha of existing irrigation schemes. Cost of new schemes is estimated at 5000US\$ per hectare
Participatory Integrated Watershed Management Project	2006-2013	AfDB, IFAD & GOTG	?	15.6	The project, a follow up to the LADEP, has both water control and rural infrastructure components and its coverage will be countrywide in both lowlands and uplands.
Managing water and energy services for poverty eradication in rural Gambia	2004 – 2006	UNDESA	23.5	3.2	The project will construct boreholes in five villages for water supply and establish vegetable gardens with the distribution network for irrigation at a total cost of US\$10.8million

Box 1: Bankable Investment Profile 1- Summary Sheet

Proposal: Natural Resources and Environmental Management Project(NRMP)

Estimated Cost: US\$ 7.58m (Phase 1) Project Duration: 5 Years(phase1), 5 Years (PhaseII)

Rationale

Serious degradation of The Gambia's natural resources base in recent times,due to inadequate agricultural production and natural resource degradation practices,inadequate knowledge and information on the status of resources, inadequate planning, control and enforcement mechanisms, and high population pressure

2. Project Objectives

2.1 Overall Goal/Development Objective

<p>Sustainable development through the rational development of The Gambia's natural resource and environment.</p> <p>2.2 Strengthen the planning and management of natural resources and environment.</p> <ul style="list-style-type: none"> • Strengthen and improve the capacity of the stakeholders on the conservation and sustainable management of natural resources and biodiversity, by organizing and training them, as well as providing them with the requisite resources • Expand the area and number of community forests and range parks, by conserving existing ones as well as establishing new ones; and • Promote the use of soil and water conservation techniques for sustainable development through the incorporation of conservation techniques in local farming practices.
<p>3. Project Description</p> <p>3.1 Project Area and Beneficiaries</p> <p>Nationwide implementation, primary beneficiaries are the rural dwellers and local institutions engaged in the management of natural resources</p> <p>3.2 Project Component and Main Activities</p> <p>Component 1: Strengthen the Public Management of the Natural Resources and the Environment</p> <ul style="list-style-type: none"> • Complete the national policy and legal framework on agriculture and natural resources management • Develop a comprehensive plan for natural resources, including the conduct of an inventory of the country's natural resource base • Provide institution building including training, in the public sector institutions <p>Component 2: improve conservation and development of natural resources, biodiversity and the environment</p> <ul style="list-style-type: none"> • Support the organization of local resource management committees and provide necessary investment including rain water harvesting and erosion control • Establish forests and range parks (including bush fire management and control) • Promote local-community income generating activities <p>Component 3: Project Coordination and Monitoring and Evaluation</p> <ul style="list-style-type: none"> • Establish effective project coordination and monitoring and evaluation mechanisms • Provide logistical support for effective management of natural resources
<p>Main Benefits</p> <p>Empowerment of local communities to take charge of their natural resources. Improved national capacity for sustainable planning and management of the natural resources stock and environment. Reduced losses of the natural resources stock and biodiversity, reduced erosion and run-off, increased production from forestry, fisheries, wildlife and agriculture. Employment and income opportunities from the sustainable management of the forest resources and from eco-tourism. Increase in tax revenue from the anticipated increase in incomes of the project beneficiaries. Increased foreign exchange earnings through increased numbers of eco-tourists and fisheries exports.</p>

<p>Box 2: Bankable Investment Profile 2- Summary Sheet Proposal: National Programme for Food Security(NPFS) Estimated Cost: US\$ 12.60m (Phase 1) Project Duration: 6 Years(phase1), 4 Years (PhaseII)</p>
<p>Rationale</p> <p>As a result of low food production and productivity, The Gambia meets only 50 percent of its food requirements. Most farmers are net purchasers of food and over 40 percent of the population do not have adequate, balanced and quality food. The widening gap between food production has to be filled by imports which now constitute a huge drain on the limited financial drain on the foreign exchange generated in the economy.</p>
<p>2. Project Objectives</p> <p>2.1 Overall Goal/Development Objective</p> <ul style="list-style-type: none"> • Improve and strengthen support services to smallholder agricultural producers, processors, grower associations and traders; • Diversify the agricultural production base into crop, livestock and fisheries and increase the income of smallholder producers • Promote small-scale community water management through irrigation and water harvesting • Promote improved post-harvest handling practices for crops,livestock and fisheries products and reserves • Promote small-scale community water management through irrigation and water harvesting
<p>3. Project Description</p> <p>3.1 Project Area and beneficiaries</p> <p>Nationwide implementation, primary beneficiaries are the rural dwellers and local institutions engaged in the</p>

management of natural resources

3.2 Project Component and Main Activities

Component 1: Strengthening of service delivery for smallholder producers

- Develop efficient and adequate extension, input delivery and marketing systems
- Strengthen research-extension farmer linkages
- Strengthen the capacity of agricultural producer organizations and improve access of entrepreneurs

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Component 2: Agricultural Diversification and Income Enhancement

- Access market opportunities and agricultural enterprises and strengthen technical capacity of producers
- Establish a seed-fund for the provision of seed and other and other essential inputs and cost-recovery basis.
- Support production, storage, marketing and processing infrastructure for small, medium –scale products

Component 3: Improvement of Post-Harvest Management Products and Community Food reserves

- Survey and identify post-harvest losses in crops, livestock and fisheries subsector and propose intervention areas
- Promote Value addition through processing and preservation
- Promote appropriate storage structures and community managed seed and cereal/food banking

Component 4: Promotion of small-scale community irrigation

- Establish/rehabilitate community irrigation schemes involving small uplifts from the river/water bodies and ground water exploitations
- Provide boreholes for high-valued crop/livestock schemes and promoting water harvesting

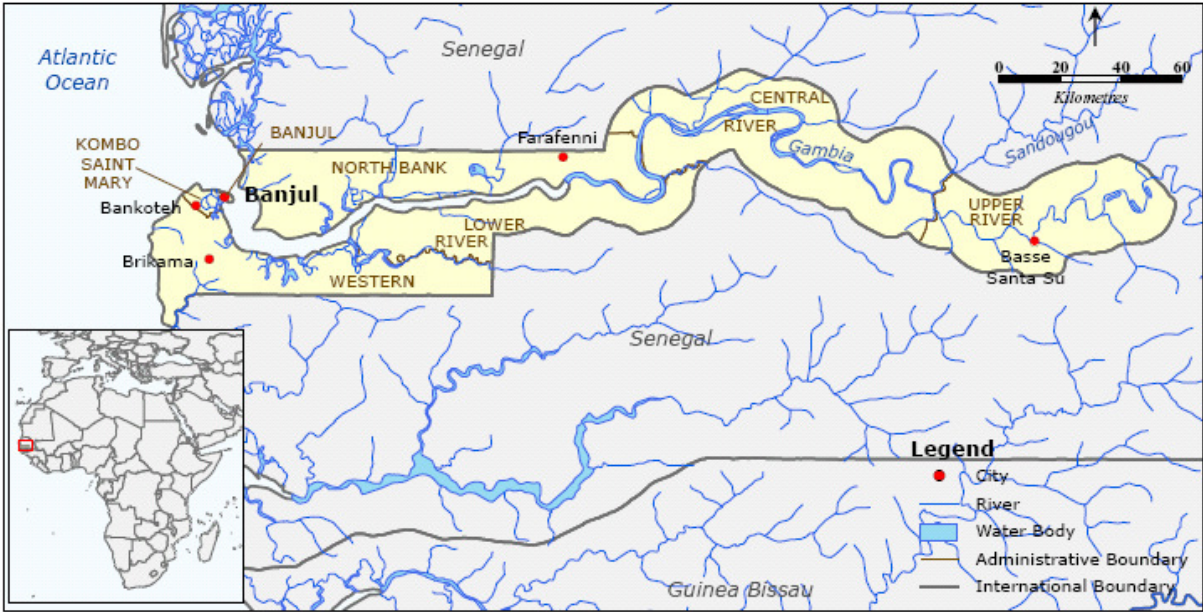
Component 5: Project Coordination, monitoring and evaluation.

- Establish effective project management, monitoring and evaluation mechanisms

Main Benefits

Improved food security through increased and year-round agricultural production by 20,000 smallholder farming households. Increased beneficiary households accrue income from the sale of value-added products and reduced post-harvest losses. Reduced drudgery through the use of agro-processing technologies for crops, livestock and fisheries. Enhanced status of soil and water resources through adoption of sustainable land and water management practices. Increased access to services and production inputs

ANNEX 1: MAP OF WATER CONTROL IN GAMBIA :



ANNEX 2: COUNTRY STATISTICS

Country and population								
Area of the country	2005	1130	1000 ha					
Cultivated area as % of the total area of the country	2005	31.4	%					
Total population	2005	1517	1000 inhab					
• of which rural	2005	74	%					
Population economically active in agriculture	2005	597	1000 inhab					
• as % of total economically active population	2005	77	%					
• female	2005	51	%					
• male	2005	49	%					
Economy and Development								
Gross Domestic Product (GDP) (current US\$)	2007	643	million US\$/yr					
• value added in agriculture (% of GDP)	2005	32.65	%					
• GDP per capita	2007	377	US\$/yr					
Access to improved drinking water sources								
Total population	2006	86	%					
Urban population	2006	91	%					
Rural population	2006	81	%					
Water Resources and management								
Average precipitation	2007	9.5	10 ⁹ m ³ /yr					
Total actual renewable water resources	2007	8	10 ⁹ m ³ /yr					
Dependency ratio (transboundary rivers)	2007	62.5	%					
Total actual renewable water resources per inhabitant	2007	5274	m ³ /yr					
Total dam capacity			10 ⁹ m ³					
Total water withdrawal	2000	0.0306	10 ⁹ m ³ /yr					
• as % of total actual renewable water resources	2000	0.38	%					
IRRIGATION AND DRAINAGE								
Irrigation potential	2007	80	1000 ha					
Water Management								
Total area equipped for irrigation	1999	2.149	1000 ha					
• as % of cultivated area	1999	0.67	%					
• annual increase rate		3.2	%					
• power irrigated area as % of total area equipped	1999	38	%					
• % of total area equipped actually irrigated	1991	65	%					
Non-equipped cultivated wetlands and inland valley bottoms	1999	13.170	1000 ha					
Non-equipped flood recession cropping area	1999	0.000	1000 ha					
Total water-managed area	1999	15.319	1000 ha					
• as % of cultivated area	1999	6.8	%					
• drained area as % of cultivated area			%					
Typology of irrigation schemes								
Small-scale schemes (<ha)			1000 ha					
Medium-scale schemes (- ha)			1000 ha					
Large-scale schemes (>ha)			1000 ha					
Irrigated crops								
Rice	1998	2.000	1000 ha					
ENERGY INDICATORS								
Energy Production			Mtoe					
Net Imports			Mtoe					
TPES			Mtoe					
- TPES/Pop			toe/capita					
- TPES/GDP			toe/thousand 2000 US\$					
- TPES/GDO (PPP)			toe/thousand 2000 US\$ PPP					
Electricity Consumption			TWh					
- EC/Pop			kWh/capita					
ENERGY SUPPLY AND CONSUMPTION (2005)*								
	Coal	Gas	Crude oil	Petroleum products	Hydro	Other Renewable & Waste	Others	TOTAL
Production								
Imports								
Exports								
International Marine								
Bunkers								
Stock Changes								
Total Primary Energy Supply (TPFS)								

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

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