



**DEVELOPING
RENEWABLES**
Renewable Energy that benefits all

Country energy information Côte d'Ivoire

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SIXTH FRAMEWORK PROGRAMME PRIORITY 3

Underpinning the economic potential and cohesion of a larger and more integrated EU

SPECIFIC SUPPORT ACTION

Project Acronym: RECIPES

Project full title: Renewable Energy in emerging and developing countries: Current situation, market Potential and recommendations for a win-win-win for EU industry, the Environment and local Socio-economic development

Contract number: 513733

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Introduction

The information in this report was gathered from publicly available sources (the source list is available at www.energyrecipes.org), like surveys, statistical data from the internet and books and other publications. The information consists of:

1. indicators and indices;
2. descriptions of the relevant energy items/subjects /themes.

Due to differences in availability of data per country the level of detail of these reports will differ.

For all the 114 developing and emerging countries of the INCO list a report like this is available. (see also www.energyrecipes.org for the countries) Except for the following 15 countries, where more detailed reports are available.

Argentina	China	Cameroon
Brazil	India	Ghana
Colombia	Indonesia	Niger
Mexico	Pacific Islands	South-Africa
Peru	Thailand	Uganda

The RECIPES project

The RECIPES project aims to contribute to the implementation of renewable energy in emerging and developing countries. The RECIPES project is financed under the 6th Framework Programme for Research and Technological Development of the European Commission.

The main objective of the RECIPES project is to provide the European Commission and other stakeholders with pragmatic information and recommendations facilitating appropriate action to further the implementation of renewable energy in emerging and developing countries, taking into account:

- | The effects on the local socio-economic situation.
- | The competitive position of European renewable energy industry.
- | The impacts on the local and global environment.

Data collection on the situation and potential of renewable energy in emerging and developing countries is the core of the RECIPES project.

An identification of the RE market potential is carried out for 15 developing and emerging countries. Local experts gathered data for all of these countries. The results of these in-depth studies are extrapolated to 99 other developing and emerging countries for which data is gathered through desk research.

See the RECIPES website (www.energyrecipes.org) for relevant data collected and reports produced.

Environmental problems

Deforestation (most of the country's forests - once the largest in West Africa - have been heavily logged); water pollution from sewage and industrial and agricultural effluents

Environment - international agreements

Party to: Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands
signed, but not ratified: none of the selected agreements

Energy situation

In 2005, Côte d'Ivoire had proven oil reserves of 100 million barrels. Production is currently just under 33,000 barrels per day (bbl/d), mainly from the Calgary-based Canadian Natural Resources' (CNR) wells. Despite large crude oil reserves, Côte d'Ivoire still imports crude oil to be processed in refineries and exported as petroleum.¹³

Côte d'Ivoire's refining facilities consist of the 65,200-bbl/d SIR refinery and an adjacent 10,000-bbl/d asphalt plant (Société Multinationale de Bitumes-SMB) in Abidjan. A petroleum products depot stores petroleum products for domestic use as well as for export to other countries in West Africa.

Natural gas reserves in Côte d'Ivoire, first discovered in the 1980's, recently have begun to be developed. Current estimates of Côte d'Ivoire's recoverable natural gas reserves stand at 1.1 trillion cubic feet. Over the next four years, the government estimates that natural gas consumption will grow by 50 percent.

Electrical consumption in 1996 amounted to 1880 GWh, of which 47 percent was supplied by hydropower. Oil and gas accounted for a remaining 53 percent of the supply. Total electricity consumption in 1997 was 3004 GWh, representing per capita consumption of 200 kWh/year. During 1996, 971 GWh of electricity was exported to neighboring nations. In 1997 the country's total installed capacity was 895 MW.¹⁴ Fuel-powered individual generators are also widely used.

The use of gas-fired electricity plants has turned the country into a regional exporter of electricity.

The government has made rural electrification a main priority, aiming to connect 200 rural districts to the national grid every year. According to official estimates, less

than 15 percent of the population living in rural areas has access to electricity, compared with 77 percent in urban areas.²

Energy sector organisation

The Compagnie Ivoirienne d'Electricité (CIE), which is 51 percent owned by a subsidiary of France's Bouygues group, has a monopoly on electricity supply. CIE handles the management of the government-owned generation facilities as well as transmission and distribution of electricity.²

Renewable energy potential

In 1979, the gross theoretical hydropower potential in Cote d'Ivoire was estimated at 46 000 GWh/year, while the economically feasible potential was 12 400 GWh/year. Of a total 973 MW power-plant capacity, there is 614 MW of hydro capacity in operation. The hydro generation in 1997 was 1868 GWh.¹⁴

Renewable energy

Privatization of the energy and water sectors and an increased emphasis on thermal production are important policies being encouraged by the government of Cote d'Ivoire, so renewable energy is not being actively promoted.¹⁴

	Côte d'Ivoire		Unit
General			
Population (2005)	17298040		
Country area	322461	km ²	
Total density of population (people/km ²)	2.060	capita/km ²	
Growth of people % /year	0.000	%	
Land use arable (%)	0.000	%	
Land use perm crops (%)	0.000	%	
Percentage of total people living in cities	44.400	%	
HDI (2002)	0.399		
Social			
Illiteracy	50.900	%	
Year of estimation	2003		
Corruption (CPI 2003) 0=high 10=low	2.100		
GDP in ppp mostly \$ 2004 est	24.78	billion	
Economic			
Income /capita \$ mostly 2004	1500		
Variability of income/capita GINI index (2004)	45.200		
Population below poverty line	37.000	%	
Year of estimation	-1995		
Total External Debt in % GDP (2004 est.)	0.000	%	
Inflation rate (consumer prices) (%)	1.400	%	
Year of estimation	2004		
Growth of economy	-1.000	%	
Year of estimation	2004		
EDI energy development index	0.290		
Energy development			
Percentage of people connected to the grid (electricity)	50.700	%	
Traditional fuel consumption (% of total energy requirements)			

2002) . Estimated consumption of fuel wood, charcoal, bagasse (sugar cane waste) and animal and vegetable wastes.	75.100	
Oil consumption	32000.000	bbl/day

Fossil fuel consumption

Year of estimation	2001	
Coal consumption (Million Short Tons)	0.000	millions short tonnes/year
Natural gas consumption, year 2001 if not mentioned others	1.35	billion cu m
Nuclear power production (Billion Kilowatthours) 2003	0.000	billion kWh/year
Hydro electricity capacity (2003)	0.614	million kilowatts

Renewable energy situation

Geothermal, Solar, Wind, Wood and Waste Electricity Installed capacity (2003)	0.000	million kilowatts
RE biomass production of primary energy from combustible Renewables and Wast TJ/Year 2002	181068.000	
RE energy electricity consumption (2003)	0.000	billion kWh/year
Total Primary Energy Supply 2000	80.250	billion kWh/year
Share of total renewables in % of TPES 2000	63.100	%
Share of renewables excluding combustible renewables and waste in % of TPES 2000	2.200	%
TPES 2003	76.800	billion kWh/year
Share of Renewables in TPES % (2003)	68.100	%
Hydro (2003)	3.500	%
Geothermal, Solar, Wind, Tide (2003)	0.000	%
Combustible Renewables and Waste (2003)	96.500	%
Total kWh per capita	2916.000	

Energy consumption for various sectors

Industry	8.000	%
Transportation	15.000	%
Agriculture	2.000	%
Commercial and public services	13.000	%
Residential	62.000	%
Other purposes	0.000	%
Total oil production	293000.000	bbl/day

Energy production

Total coal production (Million Short Tons)	0.000	millions short tonnes/year
Total natural gas production	1.35	billion cu m
Total Electricity Production GWh	5294.000	GWh

Electricity

Electricity production from coal %	0.000	%
Electricity production from oil %	0.000	%
Electricity production from gas %	67.000	%
Electricity production from biomass %	0.000	%
Electricity production from waste %	0.000	%
Electricity production from nuclear %	0.000	%
Electricity production from hydro %	33.000	%
Electricity production from geothermal %	0.000	%
Electricity production from solar thermal and PV %	0.000	%
Electricity production from other sources %	0.000	%
Electricity consumption GWh (2003)	3418.000	GWh

Total final electricity consumption GWh (2002)	3024.000	GWh
Electricity used by Industry % (2002)	50.000	%
Electricity used by Transport % (2002)	0.000	%
Electricity used by Agriculture % (2002)	2.000	%
Electricity used by Commerce and Public Services % (2002)	18.000	%
Electricity used by Residential % (2002)	30.000	%
Electricity used by Other Non-Specified % (2002)	0.000	%
Electricity used by Non-Energy Use % (2002)	0.000	%