



Country energy information Nigeria

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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

Soil degradation; rapid deforestation; urban air and water pollution; desertification; oil pollution - water, air, and soil; has suffered serious damage from oil spills; loss of arable land; rapid urbanization

Environment - international agreements

Party to: Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Ozone Layer Protection, Wetlands
signed, but not ratified: none of the selected agreements

Energy situation

Nigeria is West Africa's only significant oil producer, and is a net energy exporting country. Nigeria's natural gas reserves are the 9th largest in the world, but due to a lack of infrastructure, Nigeria flares 75% of the natural gas it produces.²

Traditional biomass (largely woodfuels) accounts for the largest share of total energy consumption (51%) followed by petroleum products (41%), natural gas (5.2%), and electricity (3.1%). Total installed electricity capacity is estimated at 5.9 GW with about 40% of the population having access to electricity (82% in urban areas and 10% in rural areas).²⁷

Electricity in West Africa is generated through thermal (58.8% of installed capacity) or hydroelectric (41.2%) resources. Natural gas has the potential to take a more significant role in the region's energy sector as fields in Nigeria, Cote d'Ivoire and Senegal are developed. Due to the region's relatively small urban population (approximately 33.9%) and the lack of infrastructure, access to commercial energy sources is limited.²

There are 41 small hydroelectric stations in operation, with a total capacity of 32 MW.¹⁴

Energy sector organisation

The overall management of Nigeria's mineral and energy resources remains the primary assignment of the Government through its various agencies. One of these, the National Electric Power Authority (NEPA) which is responsible for all electric power generation and distribution, is subject to privatization in the near future to stimulate foreign investments.²⁷

Renewable energy potential

A modest estimate of the technical potential of solar energy in Nigeria with 5% device efficiency is put at 15×10^{14} KJ of useful energy annually. This translates to about 258.62 million barrels of oil equivalent or 4.2×10^5 GWh of electricity production annually. The small hydro potential for Nigeria has been assessed at 824 MW, out of which only 4% have been exploited.²⁷

In 1980, Nigeria's technically feasible hydropower potential was evaluated at 30690 GWh/year, of which 5250 GWh was generated in 1997. Nigeria has reviewed the development of a programme of small hydro construction that will result in 702 MW of installed capacity at 236 sites and 400 MW from mini hydro plants.¹⁴

Renewable energy

The Ministry of Science and Technology has prepared a National Energy Policy that places emphasis on the exploitation of Nigeria's renewable and alternative energy sources as well as provide guidelines for environmental protection in the exploitation of Nigeria's fossil energy sources.²⁷

	Nigeria	Unit
General		
Population (2005)	128771988	
Country area	923768	km ²
Total density of population (people/km ²)	139.000	capita/km ²
Growth of people % /year	2.370	%
Land use arable (%)	31.290	%
Land use perm crops (%)	2.960	%
Percentage of total people living in cities	45.900	%
HDI (2002)	0.466	
Social		
Illiteracy	68.000	%
Year of estimation	2003	
Corruption (CPI 2003) 0=high 10=low	1.400	
GDP in ppp mostly \$ 2004 est	125.70	billion
Economic		
Income /capita \$ mostly 2004	1000	
Variability of income/capita GINI index (2004)	50.600	
Population below poverty line	60.000	%
Year of estimation	2000	
Total External Debt in % GDP (2004 est.)	20.000	%
Inflation rate (consumer prices) (%)	16.500	%
Year of estimation	2004	
Growth of economy	6.200	%
Year of estimation	2004	
EDI energy development index	0.238	
Energy development		
Percentage of people connected to the grid (electricity)	44.900	%
Traditional fuel consumption (% of total energy requirements 2002) . Estimated consumption of fuel wood, charcoal, bagasse (sugar cane waste) and animal and vegetable wastes.	82.300	
Oil consumption	275000.000	bbl/day

Fossil fuel consumption

Year of estimation	2001	
Coal consumption (Million Short Tons)	0.070	millions short tonnes/year
Natural gas consumption, year 2001 if not mentioned others	7.85	billion cu m
Nuclear power production (Billion Kilowatthours) 2003	0.000	billion kWh/year
Hydro electricity capacity (2003)	1.938	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	3167848.000	
RE energy electricity consumption (2003)	0.000	billion kWh/year
Total Primary Energy Supply 2000	1049.080	billion kWh/year
Share of total renewables in % of TPES 2000	80.800	%
Share of renewables excluding combustible renewables and waste in % of TPES 2000	0.600	%
TPES 2003	1137.400	billion kWh/year
Share of Renewables in TPES % (2003)	80.100	%
Hydro (2003)	0.900	%
Geothermal, Solar, Wind, Tide (2003)	0.000	%
Combustible Renewables and Waste (2003)	99.100	%
Total kWh per capita	7763.000	

Energy consumption for various sectors

Industry	12.000	%
Transportation	9.000	%
Agriculture	0.000	%
Commercial and public services	0.000	%
Residential	79.000	%
Other purposes	0.000	%
Total oil production	2356000000.000	bbl/day

Energy production

Total coal production (Million Short Tons)	0.070	millions short tonnes/year
Total natural gas production	15.68	billion cu m
Total Electricity Production GWh	15308.000	GWh

Electricity

Electricity production from coal %	0.000	%
Electricity production from oil %	10.000	%
Electricity production from gas %	44.000	%
Electricity production from biomass %	0.000	%
Electricity production from waste %	0.000	%
Electricity production from nuclear %	0.000	%
Electricity production from hydro %	46.000	%
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)	14458.000	GWh
Total final electricity consumption GWh (2002)	9079.000	GWh
Electricity used by Industry % (2002)	22.000	%
Electricity used by Transport % (2002)	0.000	%
Electricity used by Agriculture % (2002)	0.000	%

Electricity used by Commerce and Public Services % (2002)	27.000	%
Electricity used by Residential % (2002)	51.000	%
Electricity used by Other Non-Specified % (2002)	0.000	%
Electricity used by Non-Energy Use % (2002)	0.000	%