BEFS

Bioenergy and Food Security Projects

www.fao.org/bioenergy/foodsecurity/befs

Democratic Republic of the Congo

BEFS Country Brief

FAO

FIAT PANIS

Design: Runya Virattiya, Kaiwit Triamdamrong
Compiled by : Matthew Leete, Beau Damen and Andrea Rossi
Photo credits: ©FAO/Olivier Asselin / FAO
©FAO/Pius Utomi Ekpei Restrictions / FAO
©FAO/Giulio Napolitano / FAO
©FAO/Giulio Napolitano / FAO
©FAO/Walter Astrada / FAO
©FAO/Giuseppe Bizzarri / FAO
©FAO/Prakash Singh /FAO

1.BEFS

1.1 Bioenergy and food security

Increasing costs of fossil fuels, the threat of climate change and the need to increase energy security and access have put alternative renewable energy sources, including bioenergy, high on the development agenda. Compared with other sources of energy, bioenergy potentially offers some developmental advantages. Bioenergy can target and stimulate the agriculture sector, a critical sector for development and poverty reduction, while improving energy access, creating a new market for producers, offering new employment opportunities, and potentially contributing to environmental objectives. Nevertheless, there are concerns regarding the actual viability of the sector and its environmental and socio-economic sustainability, also in terms of potential competition with food security.

1.2 The Bioenergy and Food Security Approach

To date, the rush to develop bioenergy as an alternative to fossil fuels has tended to occur in the absence of an understanding of the associated risks and benefits. In order to assist governments in gaining a proper understanding of the issues at stake, FAO has developed the Bioenergy and Food Security (BEFS) Approach.

FAO's **Bioenergy and Food Security (BEFS) Approach** aims to assist policy-makers in assessing the interplay between natural resource availability, bioenergy production potential, rural development and food security, and in strengthening their capacity to manage the trade-offs associated with bioenergy development.

1.3 The BEFS country brief

Part of the first stage of the implementation of the BEFS Approach in a country, is to undertake a review of the agriculture, energy and food security situation at domestic level. This review provides the basis for the identification of potential bioenergy sources, and for a preliminary assessment of potential risks associated with the development of the sector.

The BEFS Approach consists of a multidisciplinary and integrated set of tools and guidance that can support countries throughout the following key steps of the bioenergy policy development and implementation process:

- **Identification of** the key **issues** surrounding **bioenergy and food security**, based on the conceptual foundation provided by the BEFS Analytical Framework, and through an **institutionalized dialogue** among relevant national stakeholders;
- **Assessment of the sustainable bioenergy potential**, based on an assessment of **land suitability** and **production costs**, and through an **analysis** of the **environmental** and **socio-economic** dimensions and implications of different bioenergy development pathways, with particular emphasis on food security;
- **Risk prevention and management**, through good environmental and socio-economic practices and related policy instruments;
- **Investment screening and appraisal** through an assessment of the viability and sustainability of proposed bioenergy investments/projects;
- **Impact monitoring, evaluation and response** at both national and project levels; and
- **Capacity building** both at **technical** and **policy** level through training on the above technical tools and guidance.

The BEFS Approach helps countries design and implement sustainable bioenergy policies and strategies, by ensuring that bioenergy development fosters both food and energy security, and that it contributes to both agricultural and rural development in a climate-smart way.

2. Country Overview

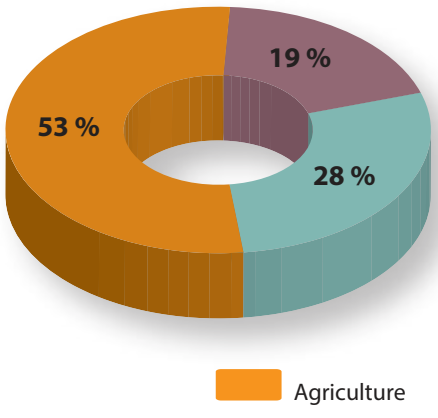
2.1 Quick facts

The Democratic Republic of the Congo is located in Western Africa and has a total area of 2,345,409 square kilometers[1]. It has a major river system, the Congo River, and a tropical climate with an average annual rainfall of over 1,500 mm[2]. The population in 2011 was 71,712,867 and increasing by an average of 2.7 percent per annum[3]. Of this, 65 percent is classified as rural, even though the share of urban households is growing at a fast rate[3].

2.2 Economy

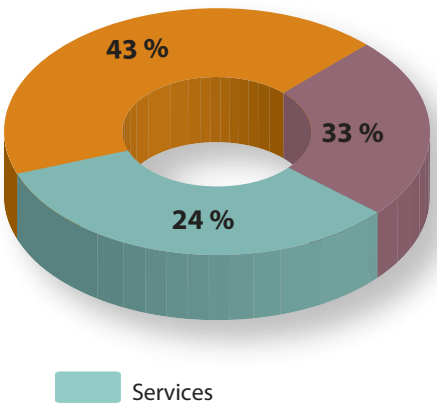
In 2009, the country's GDP grew by 2.7 percent. Between 1999 and 2009, GDP per capita increased from $95 to $99 (in constant US dollars[3]. In 2010, trade equaled 64.7 percent of the gross domestic product, and foreign direct investments equaled 22.4 percent of the latter[3]. Agriculture is the most important economic sector, but with a declining share of GDP (from 53 percent in 1999 down to 43 percent in 2009). On the other hand, between 1999 and 2009, the contribution to the gross domestic product of both industry and services increased, with the latter accounting for one third of the GDP in 2009 **(Figures 1,2)**.

Figure 1: Dem. Rep. of Congo GDP by Sector (1999)



Source: WDI (2010)

Figure 2: Dem. Rep. of Congo GDP by Sector (2009)



Agriculture Industry Services

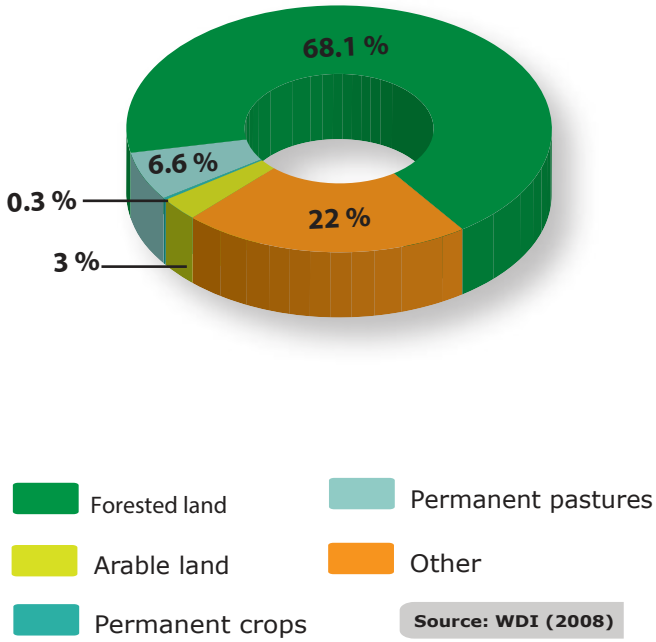
Source: WDI (2010)

3. Agriculture and Biomass

3.1 Land and water

Congo has a total of 224,500 square kilometers of agricultural land, or 9.9 percent of total land area **(Figure 3)**. Of that, 3 percent is classified as arable land[3]. The country has over 1,283 billion cubic meters of renewable water resources available, of which only 0.05 percent is withdrawn annually[4]. Of the total water withdrawn each year, around 62 percent is used in the municipal sector and 18 percent in the agricultural sector[4].

Figure 3: Dem. Rep. of Congo Land Use (2008)



3.2 Agriculture and livestock

The agricultural sector employs approximately 60 percent of the total labour force and accounts for 1.5 percent of total exports[2,3]. In Congo, both commercial farming and subsistence rain-fed farming can be found[5].

Cassava is the main crop produced in the country by volume, followed by sugar cane and maize[2]. Tobacco and coffee are the main export crops[2]. Between 1999 and 2009, cassava and sugar cane production both decreased by 9 percent, while the production of maize remained relatively stable **(Figure 4)**.

Figure 4: Dem. Rep. of Congo Crop Production - tonnes (2009)

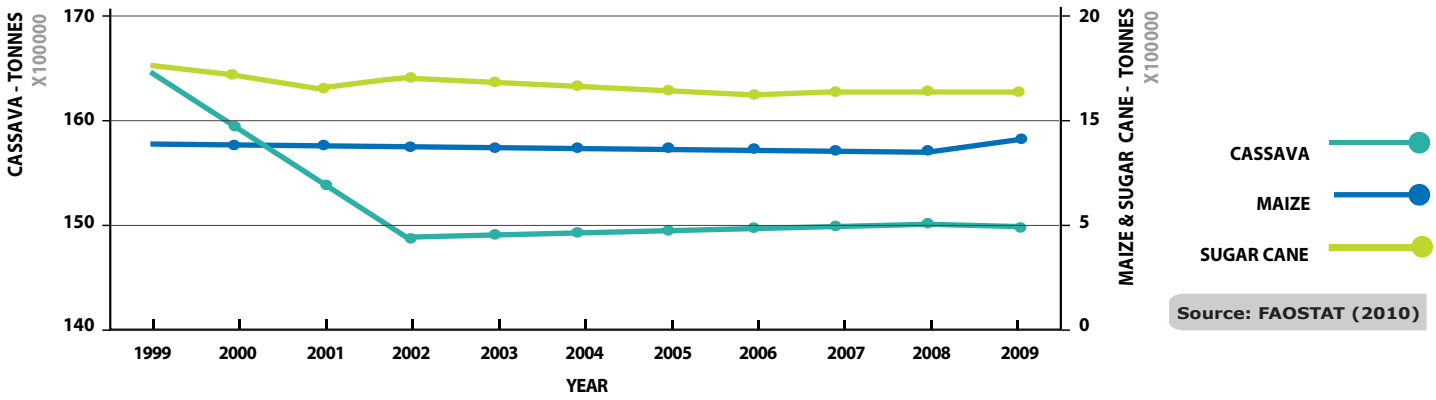
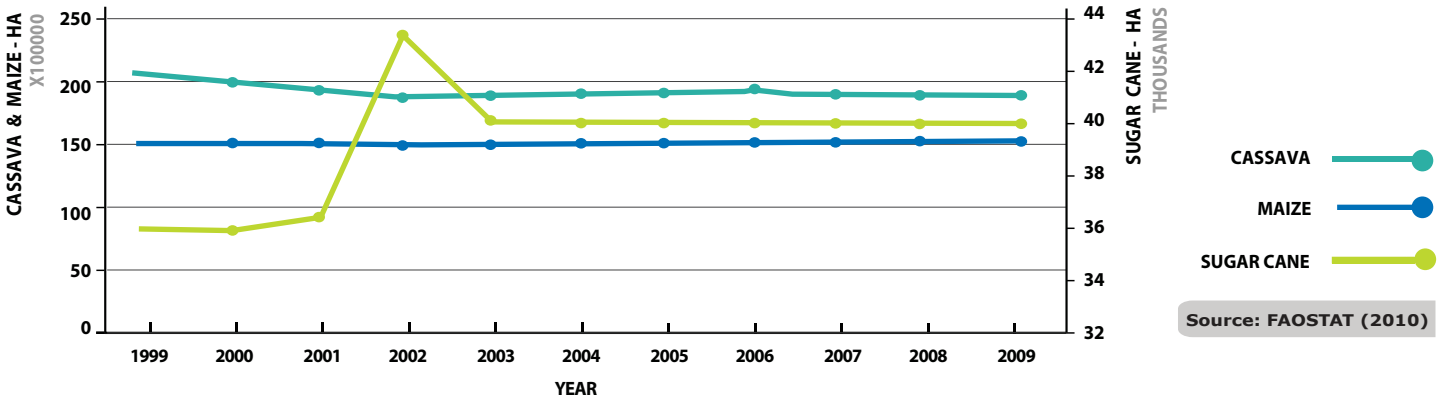
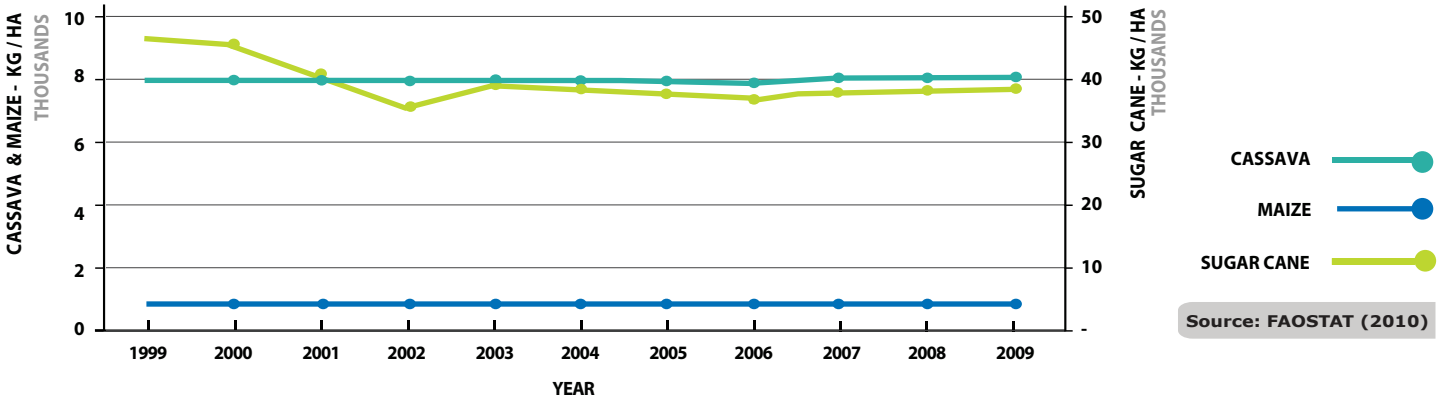


Figure 5: Dem. Rep. of Congo Area Harvested - hectares (2009)



The decrease in cassava production was due to a reduction in the area harvested, while the decrease in the production of sugar cane was due to a 18 percent reduction in yields, which was partly mitigated by an 11 percent increase in the area harvested **(Figures 5,6)**.

Figure 6: Dem. Rep. of Congo Crop Yield - kilogram/hectare (2009)



Currently, there is no data available on crop utilization.

Table 1: Dem. Rep. of Congo Crop Utilization (2009)

Commodity	Production	Domestic Consumption	Food Supply	Processing	Wastage	Feed	Seed	Other Utility
	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes

Source: FAOSTAT (2009)

Permanent pastureland accounts for 6.6 percent of total available land according to 2010 data[3]. Around 19 million poultry, 4 million goats, 965 thousand pigs, 900 thousand sheep and 755 thousand cattle are raised in Congo[2].

3.3 Policy

The *Agricultural Code 2,* which was adopted into law in 2011 as the *"Law on Agriculture"*, aims to establish a "harmonious relational framework amongst the Government, its services, economic operators in the private sector and farmers[5]." The Code covers the aspects of access to land and land security; decentralized provincial agricultural management; energy and biofuels; agricultural research and education; and infrastructure development, funding and taxation[5].

4. FOOD SECURITY

4.1 NUTRITION

Nutrition is a serious concern for the Congo. Stunting was found in 46 percent of children under the age of five in 2010[8]. There is no data currently available on caloric values of consumed crops in the Democratic of the Congo.

4.2 FOOD SECURITY AND FOOD PRICES

The Democratic Republic of the Congo is classified as a Low Income Food Deficit Country. Currently, 71 percent of the population lives below the poverty line[3] and 42 percent is undernourished[6]. With a high percentage of the country's population living in poverty, food security is a national concern. There is currently no data available on food crop trade within the country.

TABLE 2: DEM. REP. OF CONGO FOOD CROP CALORIC INTAKE (2009)

Ranking	Commodity	Calorie Share (%)

Source: FAOSTAT (2009)

TABLE 3: DEM. REP. OF CONGO NET FOOD CROP TRADE (2009)

Commodity	Production	Import	Export	Stock Variation	Domestic Consumption	Import share of Consumption
	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	%

4.3 POLICY

The *Poverty reduction Strategy Paper (PSRP)*, which was presented in 2006, identified the following five priorities: 1) Promotion of good governance and peace consolidation; 2) Consolidation of macroeconomic stability and economic growth; 3) Improvement of access to social services and vulnerability reduction; 4) HIV/AIDS prevention; and 5) Promotion of community dynamics[5].

5. Energy and Bioenergy

5.1 Energy supply and demand

Approximately 11 percent of the country has access to electricity[3], with the majority of electrified households living in urban areas[7].

Congo is heavily reliant on imports of coal and oil[7]. Total primary energy supply and total final energy consumption are dominated by primary solid biofuels[8] **(Figure 7 & 8)**. Other potential renewable energy options include modern bioenergy, solar energy, geothermal energy, and especially hydropower[7].

Figure 7: Dem. Rep. of Congo Total Primary Energy Supply (2009)

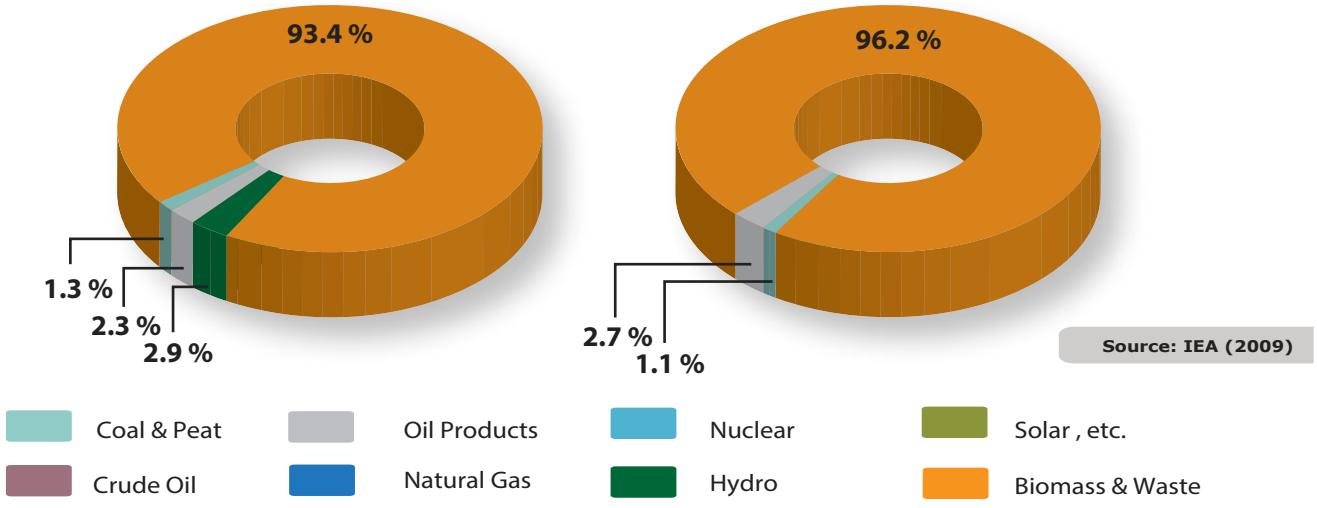
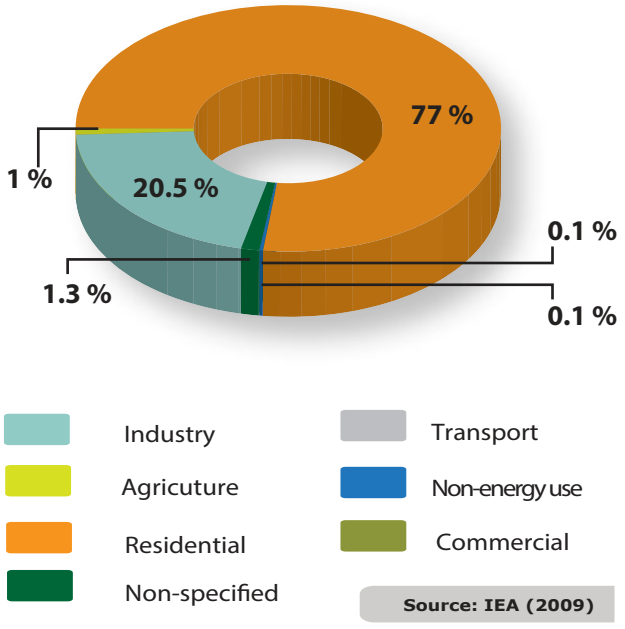


Figure 8: Dem. Rep. of Congo Total Final Energy Consumption (2009)

The main consumer of energy in is the residential sector, accounting for over 77 percent of energy use[8], followed by the industrial sector with 20.5 percent **(Figure 9)**.

Figure 9: Dem. Rep. of Congo Energy Use by Sector (2009)



5.2 Modern bioenergy

As of May 2010, there was no production of modern bioenergy in the country[9].
Further assessment is needed in order to adequately understand the potential role of bioenergy within the domestic energy mix.

5.3 Policy

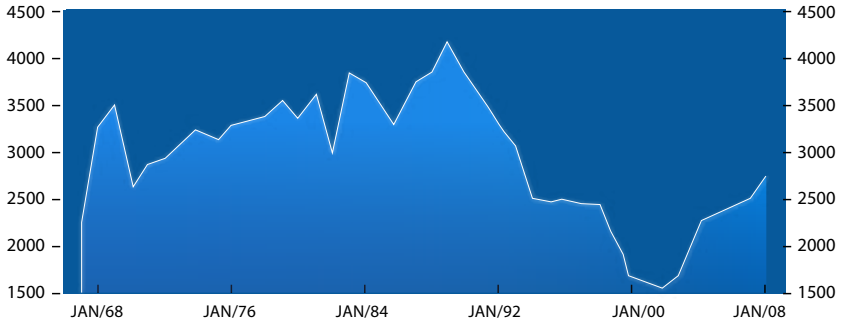
The *Energy Policy* of the Democratic Republic of the Congo, which was adopted in 2009, outlines the following objectives: alleviating poverty and illiteracy; developing projects that integrate rural regions and economically viable areas; implementing major industrial projects that demand large amounts of electricity ; and constructing numerous hydropower plants in isolated areas across the country with the intent to interconnect the stations into one grid[7]. The Dem. Rep. of the Congo is also looking to research, develop, and promote the use of hydro micro-stations and other renewable energy resources along with an independent regulating agency, energy management unit, and energy price policy through its *Development Programme*, which will be fully implemented by 2030[7].

6. Environmental Concerns

6.1 Climate change

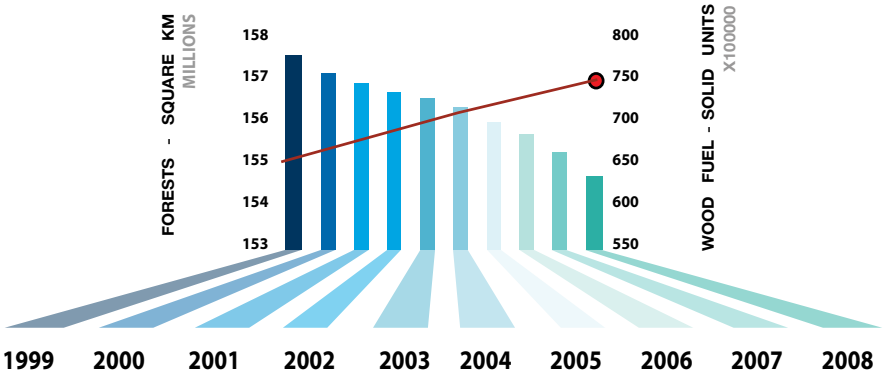
Activities taking place in the Congo River basin are threatening an important carbon sink[10]. In addition to GHG emissions, unregulated harvesting of wood fuel is causing other environmental problems as well, especially in terms of biodiversity loss. CO2 emissions have fluctuated considerably over the past few decades and have steadily grown during the last decade **(Figure 10)**.

Figure 10: Dem. Rep. of Congo CO_2 Emissions- KT (2008)



Source: WDI (2010)

Figure 11: Dem. Rep. of Congo Forest Area vs. Wood Fuel Production (1999-2008)



Source: FAOSTAT (2010)

Land-use change and especially deforestation and forest degradation are major sources of GHG emissions in Congo. As noted previously, biomass and forestry products are heavily utilized, with primary solid biofuels contributing around 95 percent of both total primary energy supply and total final energy consumption[8]. Forested areas are rapidly shrinking to meet domestic demand for wood fuel and export demand for wood products[11] **(Figure 11)**.

6.2 Policy

In the *Forestry Code*, which was adopted in 2002, the following objectives are identified: building basic capacity; securing traditional user's rights; fostering public participation; enforcing forest management plans; rehabilitating key protected areas; engaging emerging markets that reward forest protection and carbon storage; cancelling invalid forestry concessions and enforcing the moratorium on new concessions; and curbing illegal logging practices[5].

SUMMARY

- Congo's agricultural sector employs around 60 percent of its total labor force and accounts for 43 percent of the country's GDP.
- Out of Congo's total land area, 9.9 percent is used for agricultural purposes, with 3 percent of this area classified as arable land. Around 0.05 percent of the country's renewable water resources is withdrawn annually.
- The Democratic Republic of the Congo is classified as an LIFDC.
- Around 11 percent of households have access to electricity. Primary solid biofuels contribute around 95 percent of both total primary energy supply and total final energy consumption.
- At present, there is no production of modern bioenergy in Congo. Further assessment is needed in order to adequately understand the potential role of bioenergy within the country's energy mix.
- The Dem. Rep. of Congo's forest area is declining and threatening an important carbon sink as the demand for forest products and wood fuel wo increases.
- Over the last ten years, the Dem. Rep. of Congo has implemented a range of policies affecting the agricultural, energy, and environmental sectors. The development of better data on the topics covered in this brief will strengthen the government's ability to assess the effectiveness of these policy interventions and improve future decisions regarding food security and energy sector development in the Dem. Rep. of Congo.

BEFS
Bioenergy and Food Security Projects
www.fao.org/bioenergy/foodsecurity/befs

References

1.Infoplease, 2012. World- Countries- Democratic Republic of the Congo. [online] Available at: < http://www.infoplease.com/ipa/A0198161.html> [Accessed 27 February 2012].

2.The Food and Agriculture Organization of the United Nations, 2012. FAOSTAT. [online] Available at: <http://faostat.fao.org/site/291/default.aspx> [Accessed 2012].

3.The World Bank Group, 2012. Data by Country: Dem. Rep. of Congo. [online] Available at: <http://data.worldbank.org/country/Dem. Rep. of Congo> [Accessed 2012].

4.The Food and Agriculture Organization of the United Nations, 2012. AQUASTAT. [online] Available at: <http://www.fao.org/nr/water/aquastat/dbase/index.stm> [Accessed 2012].

5.Southern African Development Community, 2011. Regional Agricultural Policy- Country Summary Agricultural Policy Review Reports. [pdf] Available at: <http://www.sadc.int/fanr/docs/rap/RAP Combined Summary Reports- 8 May 2011.pdf > [Accessed 2012].

6.The Food and Agriculture Organization of the United Nations, 2011. The State of Food Insecurity in the World. [pdf] Available at: <http://www.fao.org/docrep/014/i2330e/i2330e.pdf> [Accessed 2012].

7.Renewable Energy and Energy Efficiency Partnership, 2012. REEGLE Country Profiles. [online] Available at: <http://www.reegle.info/countries> [Accessed 2012].

8.International Energy Agency, 2012. Statistics & Balances. [online] Available at: <http://www.iea.org/stats/index.asp> [Accessed 2012].

9.Southern African Development Community, 2010. SADC Biofuels State of Play Summary. [pdf] Available at: <http://www.probec.org/fileuploads/fl110902010040316-_SADC_BIOFUELS_STATE_OF_PLAY_STUDY.pdf> [Accessed 2012].

10.United Nations Development Programme, 2012. UNDP Climate Change Country Profiles. [online] Available at: <http://geog.ox.ac.uk/research/climate/projects/undp-cp/#documentation> [Accessed 2012].

11.The Food and Agriculture Organization of the United Nations, 2012. FORESTAT. [online] Available at: <http://faostat.fao.org/site/626/default.aspx#ancor> [Accessed 2012].