Demand Analysis Report- Democratic Republic of the Congo

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1. An Overview of the country

Geography

The Democratic Republic of the Congo is located in Western Africa and has a total area of 2,345,858 square kilometers .It is the second largest country of Africa which shares its 10,200 km long border with nine other countries such as Angola, Burundi , Central African Republic , Republic of the Congo Rwanda , South Sudan Tanzania , Uganda and Zambia.(Fig.1). The 4,700 km long Congo River flows through the country from east to west, ending in the Atlantic Ocean. The Congo River is said to have enough hydroelectric power to light up every home in all of southern Africa. The capital city is known as Kinshasa which is the largest city in the Democratic Republic of the Congo.

Climate

The climate of Congo is tropical; hot and humid in equatorial river basin; cooler and drier in southern highlands; cooler and wetter in eastern highlands. At north of Equator it has wet season during April to October and dry season during December to February. At south of Equator of Congo it has wet season during November to March and the dry season during April to October.

It has abundant rainfall (between 2400mm and 900mm/year depending on the area) with a mean annual temperature of between 24 and 26 °C. The dry season lasts for less than four months, except in the most southern region. A monthly average temperature of 23 to 27 degrees applies to 90 percent of the country.

Natural Resources

The DRC is endowed with great renewable natural resource potential, especially forest and hydro. . It has 80 million hectares of arable land. The estimated forest potential is 145 million hectares of tropical forest or about 60% of the Congo Basin Forests. DRC's water resource potential is 19,967 m3/yr./inhabitant (in 2008), and its navigable river network extends over about 12,700km. The country's hydro-power potential is estimated at 100,000 MW, only 2.5% of which has been developed to-date.

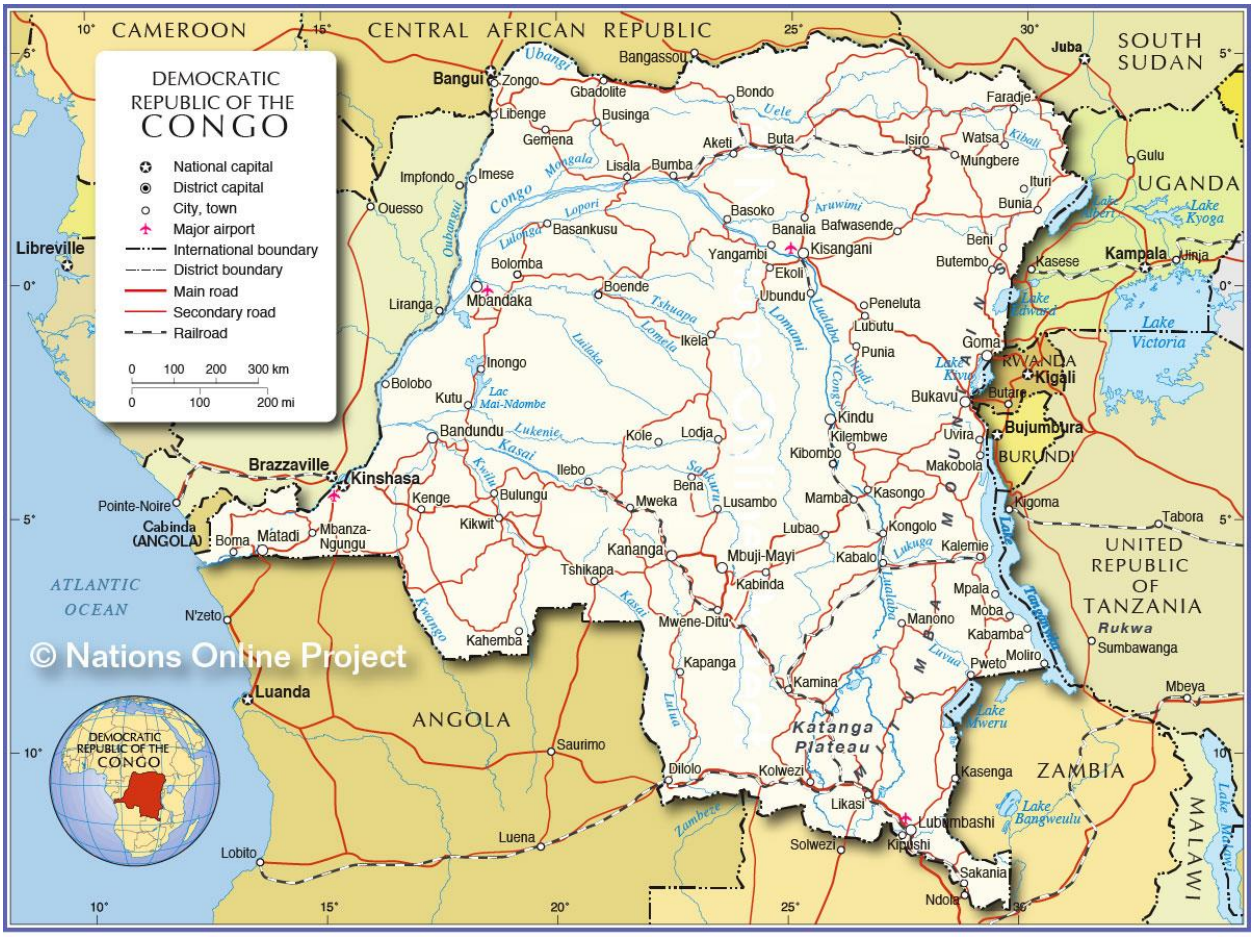

Figure 1: Map of Democratic Republic of Congo

The country is rich is flora and fauna. It has been reported that there are at least 200 species of mammals, 130 species of birds, and over 6,000 species of plants throughout the country. The rivers and lakes have many kinds of fish such as catfish, tiger fish, and electric eels.

The country is very rich in mineral resources, especially metals. With the identification of 1,100 minerals and precious metals the DRC has the potential to become one of the richest countries on the African continent .It has been reported that , the "Copper Belt", located in the south-east of the country, has approximately 34 percent of the world's cobalt, a metal used in the production of rechargeable batteries. Other mineral resources include availability of platinum, silver, gold, and Colton,

The DRC is the fifth largest oil producer in sub-Saharan Africa with huge oil reserve. The oil industry is predominantly run by foreign companies. Oil could have a significant impact on the DRC's overall development in the coming decades.

Population:

The DRC has a population of more than 79 million which is increasing by an average of 2.7 percent per annum and it is the fourth most populated nation in Africa. Of this, 65 percent is classified as rural, and the share of urban households is growing at a fast rate..It is one of the most linguistically diverse country in the world .The country has about 215 hundred different ethnic and linguistic groups. French, introduced by Belgian colonists, is the Congo's official language. However, most of the Congolese are fluent in other languages such as Swahili, Lingala, Kikongo, and Tshiluba.

About 70 percent of the population belongs to Christianity followed by African religions, Islam and other beliefs.

Political Context

The country is recovering from armed conflicts experienced during 1996-2000 period which resulted in drastic economic and social slow down. Due to Lusaka Peace accords of 1999, institutions, such as Parliament, the Senate, and provincial assemblies have been recovered. In 2011, Joseph Kabila and his party won the presidential and legislative elections and the next presidential elections are slated for 2016. Due to these developments the security situation has improved however it remains tense particularly in the eastern provinces. The new territorial division took effect in June 2015, with the country moving from 11 provinces to 26.(World Bank, 2016)

Economic Context

After a number of years of contraction, economic growth in DRC has revived since 2002, reaching an average of 5.8%. The revival of economy is driven by the recovery of activities in the wake of the gradual improvement in the political situation, and the hike in world prices of the main export products, especially copper and cobalt. The main growth drivers have been private investment in the mining and trade sectors as well as an increase in public investment, especially in construction. Agriculture continues to an important sector which employs about 70% of the population and produces 40% of GDP. The other important sectors are trade (22%) and the mining sector (12%). The manufacturing industry only represents 5% of GDP and construction 6%. The country has very small number of enterprises (9000, 80% of which are SMEs), The industrial sector is weak and handicapped by shortfall in energy supply, the obsolete production apparatus, lack of qualified manpower and the weak competitiveness of local production. (Regional department centre, 2013)

The economy is expected to grow at an estimated rate of around 8%, owing to increased investment and growth in the extractive industries (forestry, mining, and oil sectors) and the contributions of public works and the tertiary sector.

Social Context

The country is among the poorest countries in the world and was ranked 176 out of 187 countries on the Human Development in 2015, and its per capita income, which stood at $380 in 2014 is among the lowest in the world. 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 and 42 percent is undernourished. With a high percentage of the country's population living in poverty, food security is a national concern. According to United Nations estimates that there are some 2.3 million displaced persons and refugees in the country and 323,000 DRC nationals living in refugee camps outside the country. A humanitarian emergency persists in the more unstable parts of the DRC and sexual violence rates remain high (World Bank 2016)

2. An overview of agriculture and horticulture sector, policies, programmes, priorities.

Agriculture employs about 70% of the population and produces 40% of GDP. It has been estimated that the country has over 120 million ha of land suitable for farming but only an estimated 10 percent of the land is currently being used. Three distinct major agro-ecological areas of the country are as follows: (i) the alluvial basin of the Congo in the centre;(ii) the terraced plateaux in the south and north of the central basin; and (iii) the high altitude massifs (up to 5,000 m) in the east and north-east (Kane, 2004).

Basically rain-fed farming is prevalent though there is great opportunities for irrigation. Only 13,500 ha of sugar cane and rice are irrigated out of a potential four million hectares. The crop productivity is low as cultivation of crops follows traditional system including slash-and-burn farming. . Most of the farmers do not use fertilizers, plant protection measures, and improved farm implements and machineries (Kane, 2004).

Major Crops Grown

Most of the available agricultural land is found in the plateaus of the Katanga region in the southeastern part of the country. Wheat, beans, potatoes and cash crops (coffee, tea and quinine) are grown in the eastern regions (Ituri and North Kivu provinces). Rice, grain legumes, cereals and cotton are cultivated in Maniema and other central provinces. Shifting cultivation is practised in the Northern provinces. Farmers of the mountainous areas in the east and northeast of the country,

which benefit from a temperate climate cultivate sugar cane, potatoes, tea and coffee. In the north-central forest-savannah region (Tshopo, BasUele, and Haut-Uele), farmers grow rice, bananas and groundnuts. The south-western provinces of Kinshasa, Kongo Central, and Kwango, produce fruits and vegetables.

The major crops in terms of value (Table-1) are cassava, plantains &banana, mangoes/mangosteens, maize, groundnuts, and roots and tubers. The main crops in terms of production are cassava, sugarcane, maize, roots and tubers, plantains, vegetables, groundnut, and paddy (Table -2). Farmers also cultivate other crops such as rice, beans, papaya, palm oil, sugarcane, pine apple, avocados, chilies, pepper, and pulses.

Table-1: Main Crops of in Terms of Value- 2012,

nk	Commodity	Production (Int $1000)	Flag	Production (MT)	Flag
1	Cassava	1654694	*	16000000	F
3	Mangoes, mangosteens, guavas	194729	*	325000	F
4	Maize	155439	*	1200000	F
5	Groundnuts, with shell	148187	*	371400	*
6	Roots and tubers, nes	125736	*	865000	F
7	Plantains	104662	*	510000	F
9	Rice, paddy	91958	*	350000	F
10	Bananas	90685	*	322000	F
11	Oil, palm	87011	*	220000	F
12	Vegetables, fresh nes	75376	*	400000	F
13	Beans, dry	69882	*	125000	F
14	Papayas	65275	*	230000	F
15	Sugar cane	61663	*	1950000	F
16	Pineapples	58434	*	205000	F
17	Avocados	48507	*	70000	F
19	Chillies and peppers, dry	43817	*	40000	F
20	Pulses, nes	40289	*	73500	F

* : Unofficial figure
F : FAO estimate, Source :FAO, Rome
Fc: Calculated data

Table-2: Main Crops in terms of Production -2012

ank	Commodity	Production (Int $1000)	Flag	Production (MT)	Flag
1	Cassava	1654694	*	16000000	F
2	Sugar cane	61663	*	1950000	F
3	Maize	155439	*	1200000	F
4	Roots and tubers, nes	125736	*	865000	F
5	Plantains	104662	*	510000	F
6	Vegetables, fresh nes	75376	*	400000	F
7	Groundnuts, with shell	148187	*	371400	*
8	Rice, paddy	91958	*	350000	F
9	Mangoes, mangosteens, guavas	194729	*	325000	F
10	Bananas	90685	*	322000	F
11	Sweet potatoes	17613	*	265000	F
12	Papayas	65275	*	230000	F
13	Oil, palm	87011	*	220000	F
14	Pineapples	58434	*	205000	F
15	Oranges	35173	*	182000	F
16	Beans, dry	69882	*	125000	F
17	Meat, game	239563	*	110100	F
18	Potatoes	13081	*	100000	F
19	Yams	22444	*	100000	F
20	Fruit, fresh nes	31413	*	90000	F

* : Unofficial figure
F : FAO estimate
Source : FAO, Rome

Growth Rates of Agricultural Production

Congolese agriculture sector performance experienced continuous decline of per capita agricultural production and productivity since 1960. One of the major reasons for this situation was nationalization during the 1970s and civil wars during 1990s resulting in a major decline in

Table 3. Agricultural growth rates and area harvested (percent)

	Percent of agriculture production in 2011	Growth rates of agriculture production					Growth rates of area harvested				
		1960–1970	1970–1980	1980–1990	1990–2000	2000–2010	1960–1970	1970–1980	1980–1990	1990–2000	2000–2010
Food crops					−18.7						
Cassava	67.48	17.51	26.14	14.07	2	1.20	−0.77	0.52	1.10	0.24	−1.90
					−41.1						
Plantains	6.73	22.82	23.48	−4.75	3	14.35	−35.47	−58.59	−4.96	14.77	3.27
Maize	5.83	21.18	35.81	31.97	4.37	7.29	3.70	13.54	21.70	19.64	4.38
					−15.2						
Bananas	1.77	17.58	20.20	−6.53	1	13.42	−0.70	−7.48	−22.62	3.18	10.70
Rice,					−18.9						
paddy	1.53	53.24	31.36	21.85	7	4.93	5.71	−3.07	−20.57	−18.60	11.66
Sweet					−60.3						
potatoes	1.13	11.12	19.63	2.20	7	8.95	37.11	37.15	37.43	23.44	23.29
Soybeans	0.09	48.52	53.34	45.64	8.89	25.62	42.87	7.54	10.05	0.03	1.95
Cash crops											
Palm oil	0.81	−10.88	−17.74	8.81	−1.43	6.21					
Wheat	0.04	−6.55	39.67	49.62	−8.42	9.17	−8.59	−8.25	−12.56	−34.76	6.10

Source: Otachia, (2014)

Farm production and productivity. An analysis of growth rates of production of the main agricultural products in the DRC between 1960 and 2010 shows (Table -3) that there was a widely varying pattern of production growth rates among the different agricultural products over 1960–2010. Due to ineffective policy measures, the production of cash crops such as rubber, sugar, coffee, and cotton, in addition to palm oil declined starting in the early 1970s. For example the production of palm oil fell from 224,000 metric tons in 1961 to 187,000 metric tons in 2011.(Otachia, 2014) During 2011 the main food crops cassava, plantains, and maize accounted for 80 percent of total agricultural production, while cash crops represented less than 15 percent. However due to recent positive policy measures and investment in agriculture there is significant improvement in the growth rate of agriculture. As a result between 2006 and 2010 the Congolese agriculture sector grew by an average of about 4.4 percent and projections are that it will grow at an average rate of 4.6% between 2011 and 2015.

Export of Farm Produce

Export earnings have plummeted over the past years, from US$ 334 million in 1995 to US$ 56.55 million in 2008 due to a general decrease in the production of all export products. The average growth rate of exports from 2005 to 2008 was 19.1 percent. The main agricultural exports in terms of value are unmanufactured tobacco, green coffee, sugar raw centrifugal, bran of wheat and natural dry rubber. (Table-4). Some products such as palm oil are exported in less quantity especially because of the ageing of plantations, lack of technical supervision and follow-up by competent services, deterioration of production and marketing infrastructure and disruption of marketing channels. Revival of this sector is dependent on the introduction of incentives for the private sector and a programme for the large-scale regeneration and rehabilitation of plantations and industrial infrastructure.

Forest

Forests cover more than 125 million ha, most of which is poorly exploited. A part of this surface area (about 15%) was converted into national parks and/or nature reserves. Timber resources, estimated at 6 million m^2, are under exploited (less than 300,000 m^2 produced at present). Forest exploitation is carried out in an uncontrolled manner, without an exploitation.The 2002 Forest Code provides that the state owns all forest land and is responsible for managing forest resources.

Table-4: Agricultural Export in terms of Values (2011)

Rank	Commodity	Quantity (tonnes)	Flag	Value (1000 $)	Flag	Unit value ($/tonne)
1	Spices, nes	3868	5	18000	1	4654
2	Coffee, green	4483	4	15541	2	3467
3	Tobacco, unmanufactured	1165	7	3206	3	2752
4	Flour of Wheat	14064	1	3061	4	218
5	Palm oil	13350	2	2973	5	223
6	Rubber Nat Dry	831	8	2630	6	3165
7	Bran of Wheat	12001	3	2374	7	198
8	Sugar Raw Centrifugal	3500	6	2300	8	657
9	Cocoa beans	818	9	2274	9	2780
10	Palm kernel oil	800	10	1200	10	1500
11	Vegetables Preserved Nes	593	11	1196	11	2017
12	Cigarettes	213	14	969	12	4549
13	Vegetables fresh nes	192	16	428	13	2229
14	Hides Wet Salted Cattle	432	12	404	14	935
15	Wheat	430	13	100	15	233
16	Food Prep Nes	53	17	96	16	1811
17	Tea	35	19	90	17	2571
18	Vegetable Frozen	29	20	55	18	1897
19	Beer of Barley	9	21	38	19	4222
20	Food Wastes	45	18	16	20	356

Source: FAO (2016)

The Code creates categories of forest land for exploitation, conservation, and community use, and allows for different types of timber harvesting concessions. It includes a list of forest management objectives, including industrial timber production, environmental conservation, and protection of traditional rights and use.

Cassava

Cassava is the one staple food in the DRC and is produced primarily for on-farm consumption and sales to the food market with very little going to animal feed or industrial uses. Cassava consumption in the DRC accounts on average for about 55% of per-capita caloric consumption, although rural consumption rates are higher. Cassava production is possible on more than 50 percent of the DRC's land area. According to an FAO estimate of 2012, the cassava production from an area of 2.2 million ha amounted to 16 million tons. The average yields of cassava in DRC are low compared with other producing countries, due to traditional cultivation practices, poor soils, cassava pests and diseases. The DRC has the world's record average per capita consumption of 353 kg per year, which is equivalent to 145 kg in flour form. The cassava leaves are also used as a vegetable which are rich in proteins, calcium, vitamin A and Vitamin C. Some of the value added cassava products include bakery products such as unfermented flour, pulp and wafers, and industrial products such as starch, alcohol and biofuel.

Plantains and Banana

Plantains and bananas are one of the food crops of DRC. Though originating from the Asia-Pacific region, the diversity of plantains is high in DRC. Recent studies have shown that the Democratic Republic of Congo hosts 97 cultivars almost doubling the previous estimate of 56 cultivars of plantains.

Food Imports and Malnutrition

The farm production of the country is not sufficient to meet food requirements of the population. In 2012, the country spent $ 1.3 billion on food imports. Food imports are increasingly on the rise. According FAO, the important food items imported during 2011, in terms of value were wheat, wheat flour, chicken meat, sugar raw,and milk whole dried. (Table-5).

According to the level of the Global Hunger Index (GHI) the DRC is the first in the world in terms of under nutrition .There is alarming nutrient deficiency as indicated by high prevalence rates of deficiency in proteins, calorie, vitamin E, riboflavin, iron, zinc, vitamin B12 .The DRC has the highest number of undernourished persons in Africa. Close to 75 % of the total population is undernourished (UNDP 2010). The country also has the highest prevalence of malnutrition in the world. In 2005, the Congolese Ministry of Health cited malnutrition as the underlying cause in 48 % of cases of infant mortality (WHO 2005). In 2007, 45.8 % of children suffered from stunting (low height for their age), 28.2 % were underweight and 14 % were affected by wasting (low

weight for height) according to the World Health Organisation (WHO 2011). The same statistics showed that 70.6 % of children under the age of five were anemic, as were 67.3 % of pregnant women (Ulimwengu,et. al., 2013).

Table -5.Food Imports (2011)

k	Commodity	Quantity (tonnes)	Flag	Value (1000 $)	Flag	Unit value ($/tonne)
1	Wheat	459901	1	141492	1	308
2	Flour of Wheat	140736	2	101016	2	718
3	Chicken meat	66384	4	89123	3	1343
4	Sugar Raw Centrifugal	102378	3	81360	4	795
5	Milk Whole Dried	10316	17	57308	5	5555
6	Food Prep Nes	18193	11	56413	6	3101
7	Food Prep,Flour,Malt Extract	13953	13	41301	7	2960
8	Sugar Refined	46836	7	39378	8	841
9	Malt	47036	6	28904	9	615
10	Oil of vegetable origin, nes	22500	8	27400	10	1218
11	Palm oil	21052	10	25892	11	1230
12	Flour of Maize	59726	5	24793	12	415
13	Paste of Tomatoes	14095	12	21438	13	1521
14	Beverage Non-Alc	21422	9	18603	14	868
15	Pig meat	10318	16	15464	15	1499
16	Sugar Confectionery	6264	22	14674	16	2343
17	Beer of Barley	13601	14	13860	17	1019
18	Turkey meat	11443	15	13778	18	1204
19	Pastry	7911	19	12785	19	1616
20	Sunflower oil	6619	21	12552	20	1896

3. An over view of Animal Husbandry and Fisheries.

The DRC has two types of farming in livestock production the first, which is the most widespread, is the traditional farming especially of small livestock (goats, sheep and pigs). The animals are bred without shelter and without veterinary care. The second is the modern intensive farming carried out by missionaries and some private farms. The animals are housed and receive

satisfactory feeding and veterinary care. The total animal population comprises 750,000 cattle bred mainly in the east of the country, 4,100,000 goats, 910,000 sheep, one million pigs and 2.1 million poultry. National meat production was estimated at 255000 tonnes in 2012, obtained from pigs (25,900 tonnes), goats (19000 tonnes), cattle (12,000 tonnes), poultry (11,500 tonnes) and sheep (2,900 tonnes). It has been reported that livestock production has been hampered by socio-economic crisis both in terms of numbers (-30%) and of production (-20%). Meat shortage is estimated at about 130,000 tonnes annually whereas the available grazing land can accommodate more than six times the present animal population. (Kane, 2004).

Fisheries

The DRC has substantial fishery resources and it's annual production potential has been estimated at 700,000 tonnes of fish. Actual annual production has been estimated to be only 30 percent of potential i,e 220,000 tonnes. Thus the average annual fish consumption of is 4 kg per capita, compared to the the recommended international standard of 36 kg per capita per annum. (Kane, 2004).

Marine and Inland Fisheries

According to FAO report marine production through small Atlantic Ocean coastline is modest accounting only for an estimated two percent of total national fish harvests. Almost all of the marine production reported derives from artisanal units using canoes and beach seines.

The DRC holds some 59 000 km2 of inland waters, nearly 34 000 km2 or 58% of which is contained in the Congo River Basin. DRC's share of the Rift Valley lakes found on its eastern border amounts to an additional 25 000 km2 of additional inland water area..The major lakes which have commercial fishing are: Lake Moëro Luapula, Lake Tanganyika Lake Kivu Lake Edward,,Lake Albert. Congo River Basin.

Utilization of the catch

Most of the marine catch is marketed as chilled or fresh fish in Kinshasa markets. Inland catches are marketed in cured form, either as smoked, sun-dried or salt-dried product, except for markets in the immediate vicinity of landing sites, where fresh product is available. Fish is a very popular food item in most areas and demand is exceedingly high. However, the isolated location of many of the water bodies and non-existent or extremely disintegrated infrastructure impose severe limitations on distribution and marketing possibilities. The marine and inland sectors have

undergone significant decline due to unstable political and economic circumstances that have prevailed in the country over the past decade.

4. Present status and challenges in Agricultural Extension, Marketing, Insurance, Agriculture Mechanization, Food Processing, Infrastructure and any other relevant issues.

Agricultural Extension System

"At present the country does not have a formal national agricultural extension policy and strategy. The extension system involves three sub-systems namely: (1) National Extension Services or Service National de Vulgarisation (SNV) for coordination with national headquarters and a coordinating team in each province; (2) support structures including researchers, subject-matter specialists and trainees for training and technical backstopping, as well as other providers of other complementary services including INERA (National Agricultural Research Institute), SENAMA (National Mechanization Services), SENASEM (National Seed Services), and SENAFIC (National Fertilizer Services); and (3) agricultural inspection system within the MINAGRI, with an estimated 11,245 field staff, and extension agents from nongovernment-based organizations for implementation and service provision"(Ragasa et.al., 2013).

"It has, in Kinshasa, a National Coordination backed by six divisions (programming, training/research, technology, personnel management, finance, and monitoring and evaluation) each of which comprises two to three bureaux. At the regional level, there are six provincial coordinations with district bureaux and units. The units ensure direct contact with producers through grassroots development workers each of whom is responsible for 300 farmers on average. The NES operates on the ground with other stakeholders (INERA, SENASEM, NGOs and projects) within the framework of specific collaboration protocols. With the support of UNDP, FAO and the World Bank, the NES has been given a new lease of life and has started harmonizing its intervention approaches and methods. It generally uses the farmer field schools (FFS) approach developed by FAO and based on training under real farming conditions"(Kane, 2004).

The lowest levels of field staff in Ministry of Agriculture are referred to agricultural monitors, and a majority are the agricultural monitors assigned and are responsible for groupments and villages. At the sector level, they are supervised by the sector agronomists and sector veterinarians, who report to agricultural and veterinary inspectors at the territory level, who in turn report to the provincial directors and inspectors. In provinces where the decentralization policy is not fully implemented, agricultural and veterinary inspectors are also at the district level (kane, 2004).

Inefficient with an extensive field staff still on the payroll, and numerous NGOs, church-based organizations that are trying to fill in the gaps mostly from ad hoc and project-based funding. Government extension agents and supervisors are often directly hired by these NGOs, church-based organizations, or producer organizations for their extension work.

Decentralization of agricultural services is part of the overall reforms and economic recovery strategy of the DRC. However, the actual implementation of this decentralization process has been slow and has yet to even begin for provision of funding to local government units and capacity development at the local level (Ragasa et al., 2013).

Challenges

Some of the major challenges of agriculture and allied sectors are as follows:

Decline in farm production and productivity

a. After a long decline of the sector aggravated by the recent conflicts and the abandonment of farms, decline of agricultural productivity by 60 per cent between 1960 and 2006 due to factors associated with conflicts political instability.
b. At present majority of farms are mostly small and operate at subsistence level.
c. Low yields in cassava, maize, plantains, rice, the main food crops of the country, contribute to the low level of agricultural production.

Low level of investment in Agriculture

a. Low level of public and private investment in agriculture
b. Agricultural exports currently account only for 10 percent of GDP as against 40 percent in 1960.

Poor Fertility of Soil

a. The fertility of soil is low to medium level which has been further depleted due to farming without inputs and by the shortening of bush fallow/farm cycles

Use of undeveloped technologies and practices

a. Non availability of modern farm technologies due to poor agricultural research system
b. Poor adoption of improved farm technologies
c. Most of the farmers do not use fertilizers, plant protection measures, and improved farm implements and machineries

Non-availability of quality seeds for the farmers

a. The total amount of different types of seeds currently available is only 650 tonnes (of which 550 tons of maize), that is barely 0.5% of the country's needs.

Environmental Degradation and Climate Change

a. Environmental pressure is higher in urban areas because nearly 47 percent of the Congolese population is concentrated on only 10 percent of the territory, according to the same source.
b. The practice of slash and burn agriculture has contributed to the degradation of aquatic ecosystems and biodiversity.
c. Problem environmental degradation due to deforestation, extension of infrastructure and agriculture, logging, soil degradation due to erosion, urban pollution, poor management of solid waste, increasing loss of biodiversity, wars and other factors. Environmental degradation has direct consequences on health, nutrition, employment, etc.

Poor Access to Farm Credit and other Inputs

a. Farmers, lack access to credit, savings and financial services such as money transfers
b. improving access to mobile-enabled finance, and building existing savings group capacity
c. There is an especially urgent need for microcredit towards agriculture, as only 2% of government grants in 2011 were towards agriculture. It has been reported that, only 17% of microenterprises have credit with bank.
d. Lack of transport has been cited as one of the major constraints for farmers in getting their crops to the local market and as a result so post-harvest losses are very high
e. Difficulty in accessing quality inputs such as fertilizers, pesticides etc.

Poor Access of Extension services by women farmers

f. The farm women of DRC have active role in farm activities such as planting, harvesting and trading and animal husbandry practices. However their access to extension services are very poor.

Lack of involvement of Youth programs

a. Youth engagement in farming is a challenge, as few opportunities are available that would specifically encourage their participation and benefit them exclusively.

Poor and In-efficient Market System

a. Malfunction of the markets of agricultural products due to deterioration of agricultural feeder roads, as well a very serious state of decline of the river and rail roads;

b. Market actors have little access to improved post-harvest technologies. High losses at all stages of the chain result from the lack of post-harvest storage, conditioning, and processing technologies. These also contribute to health problems for consumers

c. Poor access roads and unreliable transport services of many rural areas cut smallholders off from sources of inputs as well as markets for sales, thereby providing little incentive to invest in farming.

d. Almost all market actors suffer from weak capitalization. This is particularly true of farmers who are in many zones are "asset poor" in that they lack physical assets necessary to maintaining basic minimum living standards.

Weak Producers organizations

a. Producer organizations are also weak institutions suffering from their members' poor literacy and numeracy—which hinders their ability to serve as focal points for the introduction of new technologies.

Increasing Food Imports

a. The farm production of the country is not sufficient to meet food requirements of the population. In 2012, the country spent $ 1.3 billion on food imports.

b. Food imports are increasingly on the rise.

Nutrient Deficiency

a. According to the level of the Global Hunger Index (GHI) the DRC is the first in the world in terms of under nutrition.

a. There is alarming nutrient deficiency as indicated by high prevalence rates of deficiency in proteins, calorie, vitamin E, riboflavin, iron, zinc, vitamin B12 (all above 50%).

Poor Livestock Productivity and Meat Shortage

a. Meat shortage is estimated at about 130,000 tones annually whereas the available grazing land can accommodate more than six times the present animal population.

b. Major issues in animal production are lack of improved breeds of animals and poultry, animal diseases, lack of feed and lack of veterinary services.

Decline of Fisheries

a. The marine and inland sectors have undergone significant decline due to unstable political and economic circumstances that have prevailed in the country over the past decade.

b. Actual annual production has been estimated to be only 30 percent of potential i,e 220,000 tonnes. Thus the average annual fish consumption of is 4 kg per capita, compared to the the recommended international standard of 36 kg per capita per annum.

Decline in Export Earnings

a. Export earnings have plummeted over the past years, due to a general decrease in the production of all export products.

Challenges of Agricultural Extension System

According to Ragasa et al., (2013), the challenges of Agricultural Extension System are as follows:

Poor Institutional Reforms and Lack of Extension Policy

Agricultural extension has to the major instrument for improving declining farm production, productivity and overall socio-economic status of rural population of DRC. Yet, little efforts have been made to formulate extension policy, its implications and guidelines Today, extension in DRC has to address not only the problem of increasing food production but also complex issues like sustainability, environmental protection and upliftment of women farmers.

Lack of Funding and Human Resource Management Problems

However, lack of vision and orientation, unclear mandates of the extension services led to drastic underfunding of the public extension services. Due to drastic underfunding from government budgets (less than 2% over the past decades), extension service provided by the public sector has notably suffered from lack of human and physical resources which in turn affects the performance of extension.

Donor funded Dominated Extension Programmes

Due to poor funding from government budgets much of extension priorities have been devolved to private sectors, NGOs, church-based organizations or producer organizations that have been trying to fill the gaps mostly from ad-hoc and donor-funded projects. Thus, decision-making about extension agenda was distorted toward short-term goals of the projects that are often out of alignment with national and regional priorities.

Poor Sustainability and lack of co-ordination

A high proportion of the extension activities have been donor-funded through short-term projects which raises questions about sustainability of the interventions once funding ends. Moreover, the lack of coordination of extension activities has been found causing overlap or incoherence of interventions.

Neglect of small and poor farmers

Elite capture problem (public extension agents serve large-scale farmers), and largely underserved and illiterate rural producers. This signifies that the major problem may not be the number of agents but rather managing these available human resources and providing direction and funds for them to operate.

Neglect of Educational Role of Extension

The filed extension staff are called "the monitors'', and do not have a mandate educational role and promotion of new technologies. They are mostly engaged in data collection and —as their title suggests—monitor what the farmers are doing. Their role remains to be influenced by the colonial past and remarked that "they are still largely seen as policemen" by the farmers.

Poor Capacity Building

"Well-trained extension personnel are essential to produce high-quality agricultural extension. Public extension staffing in DRC is characterized by an aging pool of extension staff who do not receive up-to-date training and skills development. Thus, the main problem is on the very low and declining technical, organizational, and managerial capacities of human resource to respond to the market needs and national priorities in extension, noting that the farmers-to-agent ratio is estimated at 1 to 535."

Lack of Linkage with Research and Education System

The absence of linkage between education and extension limits the impact of the agricultural education, the University, the Faculty of Agronomy and the institutes of agronomic studies (ISEAs) and rural development studies (ISDRs) on the extension system whose mission is to contribute to a sustainable education and socio-economic development of the agricultural sector.

Other factors

"'Important other factors affecting performance of extension staff such as salary levels, conditions of service, and facilities and equipment, which continue to be poor, prompting them to pursue more attractive opportunities in the private sector or doing other activities while staying officially as public extension providers. Lack of performance targets, mission-orientation, and accountability measures, unclear vision, mandate and strategic planning, lack of communication about ongoing reforms are also well recognized as capacity constraints to agricultural extension in the DRC."

Delivery Methods

"The performance of an extension system depends, in large part, on the appropriateness of methods and tools to transfer extension message. The results of the extension survey conducted in Bandundu, Bas-Congo, and Kinshasa revealed that travel and visit to farms, training or demonstration farms as well as information-sharing at FBO level have been used to deliver extension services to farmers. Moreover, according to the extension workshop participants, mass media have been also among the various channels through which extension services were provided. Given that agriculture in DRC is dominated by low literacy capacity and small scale farmers, some of the tools currently used in the extension may not be adequate. As for extension methods, it is understandable that without financial means and clear mission of extension, not all the methods used considered the needs, skills, and means of the target farmers".

5. Status of Agricultural Research system.

Agricultural Research System

According to Agricultural Science and Technology Indicators Report of IFPRI (2013) "twenty public agencies conduct agricultural R&D in DR Congo. National Agricultural Study and Research Institute (INERA, 194 FTE researchers in 2011) is by far the largest and employs close to half the country's agricultural researchers (in FTEs). INERA has a broad mandate covering crop, livestock, forestry, and fisheries research. It operates 12 research centers and stations across the country focusing on locally relevant adaptive research. Other important government agencies include Agri-Food Research Center(CRAA), Hydrobiology Research Center(CRH), and Nuclear Energy Research Center, Kinshasa (CREN-K), focusing on food technology, hydrology, and nuclear agriculture, respectively. The faculties of agriculture at University of Kinshasa (UNIKIN), and University of Lubumbashi (UNILU) and the faculty of science at University of Kisangani (UNIKIS) are DR Congo's largest agricultural R&D agencies in the higher education sector. An increasing number of private universities and nongovernment organizations have also become involved in agricultural R&D in recent years, but their capacity is limited. Agricultural R&D conducted by the private for-profit sector is excluded from the synthesis in this factsheet. Some private agro-industrial companies based in DR Congo are known to conduct research on oil palm, chinchona (a medicinal plant), coffee, and sugar."

Under investment in agricultural research and development is serious issue. Spending in research as a share of agricultural GDP is only 0.17%. . Moreover, full time researchers per

100,000 farmers are only 2.94 people, which imply that there is a high demand of trained manpower. The DR Congo's agricultural R&D spending levels as a share of AgGDP are among the lowest in Africa. Women agricultural scientists account for just nine percent of total scientists.Women are severely underrepresented in agricultural R&D in DR Congo, especially given that the country's agricultural labor force is predominantly female.

There are opportunities to modernize and strengthen the agricultural sector, but these will require overcoming resource constraints, administrative difficulty, poor infrastructure, and institutional and human capacity challenges. Besides academic institutions, formal AET and TVET institutions could be key players in the modernization of agriculture in DRC to increase agricultural production and productivity by supplying the needed skilled professionals in the agricultural workforce.

Challenges of Agricultural Research System

Lack of Government Funding

a. Underinvestment in agricultural research and development is serious issue. Spending in research as a share of agricultural GDP is only 0.17%.
b. The government fund constitute about six percent of National Agricultural Study and Research Institute's operating, program, and capital expenditures. Donors accounts for nearly 70 percent of these expenses, and the remainder was generated internally.

Donor Driven Research Agenda

a. Too much of the decision about research priorities is currently devolved to donors, with the result that the research agenda is skewed toward short-term goals that are not necessarily aligned with national priorities.

Lack of Qualified Research Workers

a. A severe lack of scientists qualified to the PhD level; moreover, most that do have PhD degrees are approaching retirement age
b. Universities employ the bulk of the country's PhD-qualified agricultural scientists, but their teaching commitments combined with a lack of support staff make it difficult for them to conduct research effectively.

6. Public and Private Institutions and their relevance in Agricultural development

Different farming groups and associations including co-operative associations are involved in agricultural development activities with the help of Government. According to Kane

(2004) with "the crisis experienced over the past years, there has been a vast movement to create associations, Local Development Initiatives (LDI) and national NGOs. This movement is caused by the action of international NGOs and, specifically, it is linked to the need for grouping required by an initiative or a development programme with immediate benefit to the members of the group. This drive helped initiate the farming community organization process. In 2003, there were 224 national associations and NGOs organized and approved by the State. Concerning women, there is a National Women's Council which is represented in all the provinces. There are representatives of public institutions, non-governmental organizations and women's associations." Efforts have been made to form network of NGOs which can be used an interface between projects and beneficiaries for all development activities. Notable examples of such network are Federation of Laic and Economic NGOs (FOLECO) and the National Council of Development NGOs (CNONGD) which are involved in programmes related to agriculture, processing of products, small livestock farming, and marketing At present, the performance of these structures is limited especially because of : (i) inefficiency of the steering institutions; (ii) inadequate basic training of members; and (iii) lack of financial resources. These constraints must be removed in order to revive the farming community and improve its organization (Kane, 2004).

7. Present capacity building programmes and potential areas.

The DRC has about six million farming households, 15 million farmers, and 39 million agricultural population (FAO 2010). Thus, DRC has about 535 farmers per agent or 3,400 agricultural population per agent. Anderson and Feder (2004) show that the farmer-to-agent ratio in most developing countries is more than 1,000:1. Thus it is clear the that DRC has adequate number of extension staff but what is lacking is effective management of human resources with extension organization along with proper budget provisions and technical guidance and direction.

Training Institutions for Extension Service Providers

According to Catherine Ragasa et al.,(2013) "within the ministry of education, High Institute of Rural Development (ISDR) and High Institute of Agronomic Studies (ISEA) are government institutes that offer agricultural training and education and are responsible for training AEAs and rural development workers. ISEA trains agricultural technicians (agronomists and veterinarians), while ISDR trains rural development workers. Almost all territories have at least an ISEA or ISDR. In some cases, farmer organizations also go to them directly to request training, oftentimes with a fee. Moreover, students who are taking their practicum to the villages are also

useful way to disseminate technology packages and production techniques to farmers. In these cases, ISEA and ISDR are potentially useful pathways of technology dissemination and extension services delivery that can be explored more. ISDR is more general about rural development, with focus on communication and education; while ISEA is more technical and more agriculture focused."

Challenges of Agricultural Education and Training Institutes

The major challenges in agricultural education and training in DRC are as follows:

i. Lack of sustained funding;
ii. Absence of proper vision, strategic planning, and forward-looking mentality for ISDR/ISEA in particular.
iii. Outdated curriculum.
iv. Problems of quality of education starting at the primary level.
v. Lack of up-to-date training and skills development for staff.
vi. Poor linkages with the rest of the agricultural support system including extension, research, and universities.

In addition to the formal education from High Institute of Agronomic Studies and High Institute of Rural Development, the following organizations are also involved in providing ad hoc short-term training to agricultural extension and rural development workers:

i. Donor or international organizations.
ii. Government agencies such as Ministry of Agriculture
iii. National NGOs and other local organizations.
iv. Education system, including High Institute of Rural Development
v. Agricultural research stations (High Institute of Agronomic Studies)

The issue with these trainings is that they have been provided on an ad hoc basis and in an uncoordinated manner, leaving the capacity of the agricultural training and education institutes largely weak and underfunded.

8. Training priorities of the country in Agriculture and allied sectors

Based upon the sectoral analysis the following major areas of trainings have been identified:

1. Crop Production
2. Food Technology
3. Seed Production and processing

4. Soil, Water and Protected Cultivation
5. Farm Machinery
6. Environment and Climate Change
7. Entrepreneurship, Marketing and Finance
8. Livestock Management and Dairying
9. Fisheries
10. Agricultural Extension Management
11. Agricultural Research Management and Education
12. Gender Mainstreaming

The specific training priority areas are given in Table 6, along with the number of personnel to be trained in each area:

Table -6: Specific Training Priority Areas

Sl.No	Training Areas	Number of personnel to be trained
A	**Crop Production**	
1.	Improved Crop Production Technologies, and Value Addition for Cassava, Sweet Potato and Yam	120
2.	Organic Cultivation Of Tuber Crops	90
3.	Site Specific Nutrient Management in Tuber Crops - all Tuber Crops	90
4.	Improved Production And Values Addition Practices For Mango, Guava And Papaya	90
5.	Production And Post-Harvest Management, Value Addition And Waste Utilization Of Banana.	60
6.	Improved Maize Production Technologies	60
B.	**Food Technology**	
1	Production Technology Of Savory Foods (Snacks) From Cassava	60
C.	**Seed Production and Processing**	
1.	Production Of Disease Free Quality Planting Materials in Tuber Crops - Cassava, Yams nd Aroids	30
2.	Micropropagation of Tuber Crops For Production Of Planting Materials	30
3.	Seed Production, Cultivation and Value Addition In Maize.	60
4.	Micro-Propagation Technologies for Banana.	30
D.	**Soil , Water Management And Protected Cultivation**	
1.	Soil Testing, Plant Analysis and Water Quality Assessment	60
2.	Micro Irrigation Technologies for Improving Water Efficiency and Yield Of Tuber Crops	30
3.	Protected Cultivation Technologies for Enhancing Productivity of Horticulture Crops	60
E	**Farm Machinery**	
1.	Farm Machinery - Chipping Machines, Rasper, Mobile Starch Extraction Plant, Cassava Harvester	30
F	**Environment And Climate Change**	
1.	Assessment Of Climate Change and Adaptation and Mitigation Options in Agriculture	30
2.	Management Of Environmental Pollution in Agriculture	30
G	**Entrepreneurship, Marketing And Finance**	
1.	Empowering Farmers For Agricultural Entrepreneurial Ventures : Building Trainers' Skills	60
2.	Value Chain Management Of Cassava	60
3.	Microfinancing For Agriculture Development	60

4.	Micro Entrepreneurship Promotion In Livestock Sector	60
H	**Livestock Management and Dairying**	
1.	Modern Diagnostic Techniques for Effective Livestock Health Management	30
2.	Milk & Milk Products Processing	30
3.	Backyard Poultry Farming	30
4.	Commercial Goat Farming	30
5.	Modern Piggery Production Technology	30
6.	Broiler Production	30
7.	Poultry Processing & Products Technology	30
I	**Fisheries**	
1.	Modern Marine Fish Production Technologies	30
2.	Marine Fish Processing and Value Addition Technologies	30
3.	Seed Production of Fresh Water and Marine Ornamental Fishes.	30
4.	Breeding Seed Production and Farming of Selected Commercial Important Fresh Water and Marine Food Fishes.	30
5	Inland Fish Production Technologies	30
6	Inland Fish Processing and Value Addition Technologies	30
J	**Agricultural Extension Management**	
1	Modern Agricultural Extension Approaches and Tools	30
2	Use Of ICT In Agricultural Extension	30
3	Public Private Partnership in Agricultural Extension	
4	Master Trainers Programme On Training Technology For Extension Professionals	20
K	**Agricultural Research Management And Education**	
1.	Effective Practices in Agricultural Research Project Management	30
2.	Human Resource Management in Research Organizations	30
	Educational Technology	30
L	**Gender Mainstreaming**	
1.	Gender Main Streaming in Agricultural Development	30

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