

3. DEMOCRATIC REPUBLIC OF CONGO



DEMOCRATIC REPUBLIC OF CONGO

Political Facts

- The country gained independence in 1960
- The country is headed by Joseph Kabila, and although in a post conflict stage is still regarded as politically unstable

Economic Facts

- Agriculture is essentially of the subsistence-type but there is some export of products such as coffee, cocoa, rubber, oil and timber
- GDP – Real growth rate in 2006 was 6.4%

Demographic Facts

- Total population was estimated at 65 mill. in 2006. More than 60% of the Congolese populations live in rural areas, essentially from traditional agriculture, hunting and small-scale fishery
- French is the official language. Other languages include Lingala (a lingua franca trade language), Kingwana (a dialect of Kiswahili or Swahili), Kikongo, Tshiluba
- Life expectancy in 2005 was 43.1 years

Technology Diffusion Facts

- The telecommunication system in the DRC is the least developed in the region and is extremely unreliable.
- Cellular phones dominate. In 2002, there were 10 000 main lines in use and 1 million mobile cellular subscribers in the year 2003

Introduction

When this report was compiled, the DRC did not have an official science policy. Other sources therefore had to be consulted to gain insight into the research priorities. A report of a strategic workshop of the key stakeholders that was hosted by the Ministry of Scientific Research and Technology (MSRT) provides details (in French) of some of the S&T challenges in DRC.

The proposed strategic focus areas of S&T in DRC are.

Strategic orientations

- Renewal of the institutional framework.
- Reorientation of practices and research structures in order to achieve on a contractual basis development programmes and optimize the use of available resources.
- Synergy and co-ordination
- Periodic evaluation of the research system.
- Valorisation of research findings

Because the MSRT was only established as a new ministry during the transition period, it has yet to establish itself as a functioning ministry with policies, programmes and relevant structures. Furthermore, the 2006 elections and possible change in government had a negative impact on the functioning of this ministry.

Areas of specialization in R&D

Local and International Research institutions

The scientific research capacity exists mainly in public institutions such as universities and government owned research institutions. The Universities of Kinshasa, Kisangani and Lubumbashi are the main performers of research in the DRC. The University of Kinshasa (founded in 1954) has faculties of science, polytechnic, medicine, and pharmacy. The University of Kisangani (founded in 1963) has faculties of science and medicine. The University of Lubumbashi (founded in 1955) has faculties of science, polytechnic, veterinary medicine, and in addition, five university-level institutes offer training in information science, agronomy, and medicine. The most important institutions are summarized in Table 34.

Table 34: List of research institutions and ministry responsible

RESPONSIBLE MINISTRY	NAME OF INSTITUTION
Ministry of Tertiary Education and Universities	University of Kinshasa University of Lubumbashi University of Kisangani Catholic University Protestant University
Ministry of Scientific Research and Technology	National Institute For Agricultural Study And Research (INERA) Nuclear Research Centre Geographic Institute of DRC The Centre For Geological And Mineral Research Institut National de Recherche Biomedicale
Ministry of Environment	The Institute of Nature Conservation

Source: Various websites

The *Institut National de Recherche Biomédicale (INRB)* warrants further discussion. It is the national public health laboratory and is located in Kinshasa. Established in 1984, the well-equipped institute managed to survive and prosper despite the many social and political problems. INRB has functioned well thanks to bilateral and multilateral cooperation that have enhanced its research infrastructure and working conditions of its scientists and technicians. Its core mandate covers clinical laboratories, applied research, laboratory based disease surveillance, reference laboratory and training. INRB has extensive collaborations with the WHO, National Institute of Health (USA), US Army Reed and Belgium. It has a working relationship with the National Institute of Communicable Diseases in South Africa.

The *International Institute of Tropical Agriculture (IITA)* is an Africa-based international research-for-development organization, and is also stationed in the DRC. They have more than 100 international scientists based in various IITA stations across Africa. This network of scientists is dedicated to the development of technologies that reduce producer and consumer risk, increase local production, and generate wealth. IITA is supported primarily by the Consultative Group on International Agricultural Research (CGIAR). (CREST & High Impact Innovation, 2007)

Research output²⁹

Research papers published in ISI journals number 245 over the past seven years (an average of 35 per year). Table 35 shows that output is erratic but with a positive increase over the past two years. Table 36 provides information on the affiliations of co-authors. The lasting influence of the colonial period is still seen in the strong Francophone connections (both with Belgium and France) with whom the strongest collaborations are maintained.

²⁹ Data on output provided by Nelius Boshoff

Table 35: ISI publications produced by authors from the DRC, by publication year and publication type (2000-2006)

Publication year	Total ISI publications	ISI publication type		
		Article	Letter	Review
2006	51	47	2	2
2005	41	39	2	0
2004	33	30	2	1
2003	36	35	1	0
2002	31	27	4	0
2001	16	15	1	0
2000	37	34	1	2
Total	245	227	13	5

Table 36: Country affiliation of all authors of DRC publications (2000-2006)

Country affiliation of publication authors	Unit count		Fractional count	
	Count	% of publications with such country affiliation	Count	% of total publications
DRC	245	100%	117.35	48%
Belgium	83	34%	34.83	14%
France	37	15%	12.08	5%
USA	37	15%	13.10	5%
Germany	19	8%	6.83	3%
Japan	18	7%	6.92	3%
Switzerland	18	7%	4.83	2%
UK	17	7%	4.70	2%
Cameroon	12	5%	2.65	1%
China	11	4%	4.58	2%
Norway	11	4%	4.33	2%
Canada	10	4%	3.65	1%
South Africa	8	3%	2.56	1%
Botswana	8	3%	2.06	1%
Congo Republic	7	3%	1.71	1%
Other countries	--	--	22.82	9%
Total	--	--	245	100%

The predominance of output in the health sciences is clearly illustrated in Table 37. If one adds up all the fractional papers in the Health sciences, it indicates approximately to 47% of all output. This emphasis on health research is further illustrated when we look at the institutional affiliations of the authors as summarized in Table 38.

Table 37: ISI category classification of journals in which DRC publications appear (2000-2006)

ISI journal category	Unit count		Fractional count	
	Count	% of publications within journal category	Fraction	% of total publications
Public, Environmental & Occupational Health	46	19%	28.42	12%
Tropical Medicine	40	16%	19.42	8%
Infectious Diseases	28	11%	14.08	6%
Immunology	23	9%	9.50	4%
Pharmacology & Pharmacy	21	9%	7.50	3%
Plant Sciences	21	9%	8.50	3%
Zoology	15	6%	14.50	6%
Chemistry, Medicinal	13	5%	3.67	1%
Geosciences, Multidisciplinary	13	5%	11.17	5%
Virology	13	5%	6.50	3%
Ophthalmology	9	4%	9.00	4%
Parasitology	8	3%	4.67	2%
Medicine, General & Internal	8	3%	8.00	3%
Integrative & Complementary Medicine	7	3%	1.75	1%
Paediatrics	7	3%	4.00	2%
Other	--	--	94.32	37%
Total	--	--	245	100%

Table 38: Organisational affiliation of DRC authors (2000-2006)

R&D organisation	Unit count	% of publications listing organisation
Univ Kinshasha	61	25%
Natl Inst Biomed Res	22	9%
Univ Lubumbashi	17	7%
Ctr Rech Sci Nat	14	6%
Clin Univ Kinshasa	13	5%
Minist Hlth	13	5%
Kinshasa Univ Hosp	13	5%
Programme Natl Lutte Trupanosomiase Humaine Afric	11	4%
Project SIDA	8	3%
Lab Programme Natl Lutte Contre S (Lab PNLS)	6	2%

Notes: Only the most productive organisations are reported in the table above. Moreover, *Clin Univ Kinshasa* and *Kinshasa Univ Hosp* could refer to the same organisation – this would need to be verified. Also, the two national health programmes (*Programme Natl Lutte Trupanosomiase Humaine Afric* and *Lab Programme Natl Lutte Contre S*) could probably also be classified within the Ministry of Health although the Ministry is not listed in the publication.

Table 39: Number of Publications by top Source Title (6 and more)

Source Title	Record Count	% of 448
Archives de Pediatrie	27	6.0%
Bulletin de la Societe de Pathologie Exotique	13	2.9%
Tropical Medicine & International Health	11	2.5%
American Journal of Tropical Medicine And Hygiene	9	2.0%
Forest Ecology And Management	9	2.0%
Acta Tropica	8	1.8%
Bulletin of The World Health Organization	8	1.8%
Emerging Infectious Diseases	8	1.8%
Clinical Rheumatology	7	1.6%
Journal of Ethnopharmacology	7	1.6%
Primates	7	1.6%
African Journal of Biotechnology	6	1.3%
Aids Research and Human Retroviruses	6	1.3%
American Journal of Primatology	6	1.3%

Source Title	Record Count	% of 448
International Journal of Primatology	6	1.3%
Journal of Infectious Diseases	6	1.3%
Surface Science	6	1.3%
Transactions of the Royal Society of Tropical Medicine and Hygiene	6	1.3%

Size of the R&D workforce

Universities R&D workforce

Public Sector R&D workforce

Science and Technology personnel include researchers, technicians, and administration staff. The total number of personnel in this sector, as recorded by the secretary general of the MSRT in July 2004 is presented in Table 40 [For Ministry of Scientific Research and Technology (MRST) and the Ministry of Tertiary Education and Universities (MIN ESU)].

Table 40: Total number of scientific personnel in MSRT and MIN-ESU

Category	MIN. R.S.T		MIN. E.S.U		TOTAL	
Researchers	664	10,4%	8.428	32,6%	9.092	28%
Technicians	575	9,0%	869	3,4%	1.444	5%
Admin. staff	5 143	80,6%	16.525	64,0%	21.668	67%
TOTAL	6 382	100%	25.822	100%	32.204	100%

Source: Draft Strategic Plan for Development of Science and Technology in the Democratic Republic of Congo, published by Ministry of Scientific Research and Technology, Workshop Proceedings published by MSRT

Based on Table 40 one could estimate the FTE research complement in the country. If one adds to the 664 full-time researchers in the MSRT, the FTE of academic staff (calculated at 20% of time devoted to research for 9 092 academics) another 1 818 full-time researchers, one arrives at an estimate of approximately 2 500 for the public sector R&D workforce. This translates to 38 researchers per million of the population.

For both ministries, the total number of administration personnel represents 67% against 33% of research personnel and technical personnel. The situation is of concern for the MSRT where administration personnel are 81% against 19% of research and technical personnel. Further analysis of the data also reveals that only 16% of total personnel hold a doctoral degree.

Trends in masters and doctoral enrolments

No information is available

Key R&D Initiatives and Networks

No information is available on key initiatives and networks

Research priorities

Financial resources provided in accordance with current legislation for financing and promotion of scientific research in the DRC consists of subsidies or grants allocated by the State and donations and incomes generated by the sector. For a decade state subsidies have been the main source for the sector: The support from the international community has decreased due to embargos and the unstable political climate. The research sector cannot generate its own income because of obsolete research facilities and infrastructure. The funding of research is negligible and had been declining from 1983 to 2001. It has increased marginally to US\$3.42m in 2003.

No information on research priorities is available.

Collaboration through international and regional networks *Cooperation with South Africa*

From the status report on collaboration from the DST there is no agreement with South Africa and no projects have been identified. The University of Lubumbashi has collaborations with the UCT, UP and UKZN but no information of the nature of the cooperation was available. INRB has collaborations with the National Institute of Communicable Diseases in South Africa.

Bilateral cooperations

From the Internet search, the following countries have bilateral collaborations with DRC:
Greece, Tunisia, Canada, France, Brazil, Belgium and USA

Multilateral associations

The following multilateral agencies play an important role in the reconstruction and rehabilitation of the DRC. The following is a list of some of the main agencies that are involved in the country:

- African Development Fund
- WHO
- UNICEF
- UNESCO

Institutional collaboration

The University of Lubumbashi has collaborations with the following institutions (information collected from its website).

- Belgium:
 - Universities French-speaking Belgium: Université Libre de Bruxelles; Catholic Université van Leuwe; Université de Liege; University Facultés of Mons University; Facultés Notre Dame of the Peace of Namur; Université de Mons-Hainaut.
 - Universities of languages: Dutchwomen of Belgium; Vrije Universiteit Brussel (VUB); Katholieke Universiteit; Leuven Universiteit; Antwerpen Universiteit Race
 - Royal Museum of Central Africa of Belgium
- France: Université Marc Bloch of Strasbourg Université Pierre and Marie Curie; Université Jules Vernes of Picardy; Université of Amiens of Picardy; Ecole Nationale Supérieure of the Mines of Saint-Etienne.
- Switzerland: Université of Lausanne
- Ukraine: National Mining University
- Zambia: University of Zambia (Lusaka)
- Angola Universiti Agostino Neto (Luanda)
- DRC: Université of Kinshasa, Catholic Université of the Graben
- Canada: Université Laval, Université of Montreal
- Cameroun: Université of Yaoundé
- Brazil: Université of Sao Paulo
- South Africa: University of Cape Town, University of Pretoria, University of KwaZulu-Natal

Other networks

The Democratic Republic of the Congo is part of ECCAS (Economic Community of Central African States) which is a regional economic integration institution for Central African countries. CEEAC/ECCAS was established on 18 October 1983 by the UDEAC members and the members of the Economic Community of the Great Lakes States (CEPGL) (Burundi, Rwanda and the then Zaire) as well as São Tomé and Príncipe.

The Natural Products Research Network of Eastern and Central Africa (NAPRECA) has the mandate to mobilize scientists in the relevant fields in the East and Central African sub-region to contribute effectively to the development of the science of Natural Products. The need for NAPRECA

was borne from the realization that Africa was rich in biodiversity but poor in research and development in Natural Products. (www.napreca.net). So far NAPRECA branches have been formed in 11 East and Central African countries. The countries are: Botswana, Cameroon, DRC, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania, Uganda and Zimbabwe. NAPRECA got affiliated to UNESCO as part of its Network programmes in November 1987 with its activities starting in 1988. (CREST & High Impact Innovation, 2007).

The Regional Potato and Sweet Potato Improvement Network (PRAPACE) is one of the pioneer networks of ASARECA. Collaborative research on potato started in 1982 when the national agricultural research institutions of Burundi, Rwanda and the Democratic Republic of Congo established the Programme Régional d'Amélioration de la Culture de la Pomme de Terre en Afrique Centrale (PRAPAC) to align their potato programmes with those of the International Potato Centre (CIP). Between 1990 and 1999 Uganda, Ethiopia, Kenya, Eritrea, Tanzania, Madagascar and Sudan joined PRAPAC in that order. Sweet potato was also taken up in 1990. This changed the character of the network which adopted a new acronym PRAPACE. Since its formation, PRAPACE operated as an independent network with close affiliation to the International Potato Centre (CIP). In 2003, PRAPACE was integrated into the ASARECA arrangement. The United States Agency for International Development (USAID) funds the network. (www.asareca.org/index.php?option=networks&Itemid=54; www.foodnet.cgiar.org/prapace/about/about_prap.htm). (CREST & High Impact Innovation, 2007)

The ASARECA Animal Agricultural Research Network (A-AARNET) was established in 1997 to strengthen NARS capacity in livestock research in East and Central Africa. As a regional network, A-AARNET caters for the needs, interests and expectations of stakeholders in the 10 member countries of ASARECA which are Burundi, D.R. Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda. These stakeholders include NARS scientists, NGOs, farmers and other public and private sector organisations. (CREST & High Impact Innovation, 2007).

Sorghum is the third most important crop among the commodities and ASARECA established to this effect the Eastern and Central Africa Regional Sorghum and Millet Network (ECARSAM), which became operational in October, 2003. ECARSAM strives to create synergy and effectiveness of national agricultural research systems (NARS) and all stakeholders through networking to remove some of the bottlenecks. Their aim is to increase productivity of sorghum and millet and their use in processing at farm and village levels by generating and adopting appropriate technologies, knowledge and information. The ASARECA member countries all form part of this network: Burundi, D.R. Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda.

RAIN (Regional Agricultural Information Network) is a network of agricultural information organizations and professionals operating in 10 countries in eastern and central Africa – Burundi, D.R. Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan Tanzania and Uganda. RAIN's mission is to promote the provision and sustainable management of client-orientated agricultural information throughout the ECA region. Its particular emphasis is on the strengthening of regional capacities to access, generate, exchange, package, disseminate and use this information to further economic growth. (CREST & High Impact Innovation, 2007).

Facts and Figures on brain drain

No brain drain data for the DRC is available

International and foreign funding of S&T

The DRC is a recipient of considerable official donor assistance, which amounted to R1.81bn in 2004 according to the Human Development Report. This figure increased substantially after the war. Most of the aid is for reconstruction of the infrastructure that has been devastated by the civil war, mismanagement and corruption. Information on donor assistance intended for research is not detailed.

The DRC received Official Development Assistance to the amount of R1.81bn in 2004. The USA (US\$804m), France (US\$775m) and Belgium (US\$529m) were the top three donors. Most of the assistance was related to debt during the period 2003-2004. From the data it is not possible to establish what proportion was intended for research and development.

Figure 5: Summary of ODA to DRC

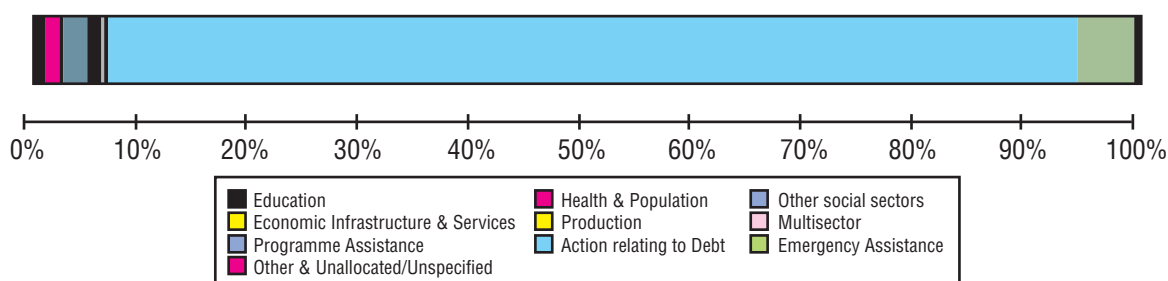
Democratic Republic of Congo

Receipts	2002	2003	2004
Net ODA (US\$ million)	1 188	5 421	1 815
Bilateral share (ODA)	23%	92%	64%
NET ODA/GNI	22.6%	98.6%	28.6%
Net Private flows (US\$ million)	-79	-2 005	-13

For reference	2002	2003	2004
Population (million)	51.6	53.2	54.8
GNI per capita (Atlas USD)	90	100	120

Top Ten Donors of gross ODA (2003 - 2004 average) (US\$ m)	
1	United States 804
2	France 775
3	Belgium 529
4	Germany 314
5	IDA 235
6	Italy 235
7	EC 165
8	United Kingdom 162
9	Netherlands 140
10	Sweden 97

Bilateral ODA by Sector (2003 - 2004)



Sources: OECD, World Bank.