

THE REPUBLIC OF CAMEROON

Jacques Gaillard, UR Knowledge and Development, IRD, France;
and Hocine Khelfaoui
Senior researcher, CREAD (Algeria) and Associate Professor, CIRST (UQAM, Montreal)
in collaboration with Nya Ngatchou¹

Acronyms

CEIPS:	Centre d'Etudes, d'Instruction et de Production des Semences
CENEEMA:	Centre National d'Etudes et d'Expérimentation du Machinisme Agricole
CIRAD:	institut français de recherche agronomique au service du développement des pays du Sud
CNRA:	Centre National de Recherches Agronomiques
DAC:	Direction des Affaires Culturelles
DGRST:	Délégation Générale à la Recherche Scientifique et Technique
ICP:	Institut des Cultures Pérennes
ICRAF:	International Centre for Research on Agroforestry
ICVT:	Institut des Cultures Vivrières et Textiles
IFAC:	Institut Français de recherche fruitière outre-mer
IFCC:	Institut Français du Café, du Cacao et autres plantes stimulantes
IFORD:	Institut de Formation et de Recherche Démographique
IGN:	Institut Géographique National
IRA:	Institut de Recherche Agricole
IRAD:	Institut de Recherche Agricole pour le Développement
IRAF:	Institut de Recherche Agricole et Forestière
IRAT:	Institut de Recherches Agronomiques Tropicales
IRCA:	Institut de Recherche sur le Caoutchouc en Afrique
IRCT:	Institut de Recherche du Coton et des Textiles
IRGM:	Institut de Recherches Géologiques et Minières
IRHO:	Institut de Recherche pour les Huiles et Oléagineux
IRIT:	Institut de Recherches Industrielles et Technologiques
IRZV:	Institut de Recherche Zoologique et Vétérinaire
IZPV:	Institut de recherches Zootechniques, Pastorales et Vétérinaires
MESRS:	Ministère de l'Enseignement Supérieur et de la Recherche Scientifique

¹ The country profile draws on the following reports:
Le Cameroun by Jacques Gaillard and Hocine Khelfaoui in collaboration with Nya Ngatchou in Waast Roland and Jacques Gaillard (Coord.). 2001. L'état des sciences en Afrique. Final Reports to the European Commission and the French Ministry of Foreign Affairs, 16 volumes, Paris: IRD, 1050 pages : ERBIC Agreement 18 CT 98 9164) and Grant no 9801 49 800
Gaillard Jacques et Eren Zink. 2003. Scientific Research Capacity in Cameroon: An Assessment of IFS Support. MESIA Report No 5, Stockholm: International Foundation for Science, 72 pages.

- NGO: Non-governmental organisation.
- OCEAC: Organisation de Coordination pour la lutte contre les Endémies en Afrique Centrale
- ONAREST : Office National de la Recherche Scientifique et Technique
- ORSTOM : Office de Recherche Scientifique et Technique Outre-mer
- STABEX : Système de Stabilisation des Exportations des produits agricoles (European Union)

General introduction to the country and the S&T system

Compared to other African countries, Cameroon enjoys relative political and social stability, which has in turn permitted the development of agriculture, roads, and railways, as well as an extensive petroleum industry. In general, Cameroon's natural resources are better suited to agriculture and forestry than to industry. Soils and climate in the south encourage extensive cultivation of crops such as cocoa, coffee, and bananas. In the north, natural conditions favour crops such as cotton and peanuts. For a quarter-century following independence, Cameroon was one of the most prosperous countries in Africa. The drop in commodity prices for its principal exports - petroleum, cocoa, coffee, and cotton - in the mid-1980s, combined with an overvalued currency, widespread corruption, and economic mismanagement, led to a decade-long recession. Real per capita GDP fell by more than 60% from 1986 to 1994. The current account and fiscal deficits widened, and foreign debt grew. Yet because of its oil resources and favourable agricultural conditions, Cameroon still has one of the best-endowed primary commodity economies in sub-Saharan Africa. Cameroon is known for having one of the best education systems in Africa. Primary school is both free and obligatory. Statistics indicate that 70% of all children aged between 6-12 years go to school, whilst 79% of the Cameroon population as a whole is literate. In the southern areas of the country, almost all children of primary-school age are enrolled in classes. However, in the north, which has always been the most isolated part of Cameroon, registration is low. Most students in Cameroon do not go beyond the primary grades.



The country has institutions for teacher training and technical education. At the top of the educational structure is the University of Yaoundé. There is, however, a growing trend for the wealthiest and best-educated students to leave the country in order to study and live abroad, creating a brain drain.

Table 1: Social indicators

Indicators 1985-2004	Total population (2003) ⁽¹⁾	Population under age 15 (2003) ⁽¹⁾	Urban population (1975) ⁽¹⁾	Urban population (2003) ⁽¹⁾	Migration stock (2000) ⁽²⁾	Annual population growth rate(1975-2003) ⁽¹⁾	Population living below \$2 a day (Data refer to the most recent year available from 1990 to 2003) ⁽¹⁾
Measure	Million Inhab.	(% of total)	(% of total)	(% of total)	(% of population)	%	(%)
	15.7	41.9	26.9	51.4	1	2.6	50.6

(1) : UNDP Human development indicators

(2) : world development indicators

Table 2: Demographic indicators

Indicators 1999	Life expectancy at birth (2003) ⁽¹⁾	Infant mortality rate (2003) ⁽¹⁾	Adult literacy rate (2003) ⁽¹⁾	Combined gross enrolment ratio for primary, secondary and tertiary schools (2002/2003) ⁽¹⁾ 1	Public expenditure on education (2000-2002) ⁽¹⁾	Public health expenditure (2002) ⁽¹⁾	Tertiary Gross enrolment ratio (2002-2003) ⁽²⁾	Students / million Inhab.
Measure	Years	(per 1,000 live births)	(% ages 15 and above)	(%)	(% of GDP)	(% of GDP)	Number	
	45.8	95	67.9	55 ²	3.8	1.2	5	40

(1) : UNDP Human development indicators

(2) : world development indicators

1 - Data refer to the school year 2002/03, unless otherwise noted. Data for some countries may refer to national or UNESCO Institute for Statistics estimates

2 - Preliminary UNESCO Institute for Statistics estimate, subject to further revision.

Table 3: Economic indicators

Indicators 1975-1999	GDP per capita annual growth rate (1975-2003) ⁽¹⁾	GDP per capita (2003) ⁽¹⁾	GDP (2003) ⁽¹⁾	Structure of output (2003) ⁽²⁾		
Measure	%	(PPP US\$)	(PPP US\$ billions)			
	-0.5	2,118	34.1	44	17	39

(1) : UNDP Human development indicators

(2) : world development indicators

Sources: World Bank. World development indicators 2005

The unemployment data are from the ILO database *Key Indicators of the Labour Market*, third edition.

Cameroon inherited several research institutions and, besides, many research works performed by isolated people on very different subjects: botanic, zoology, archaeology, anthropology, history, sociology, geography, geology, etc. This patrimony was preserved and developed until the climax of the national research system from 1975 to 1985. During this decade, the part of the state budget dedicated to research activities increased tenfold, a special status for researchers was promulgated in 1980 and the number of researchers increased. The economic crisis of the end of the 1980's upset this dynamic. No more money was allocated to research institutes, far less than needed to universities and researchers received so shot salaries that they were forced to go and work for foreign institutions and NGOs. Thus, it seems that national research totally escaped authorities' control and does not answers to any defined orientation.

1. History of science

Research activities were at first performed by non-affiliated individuals. The creation of the Société d'Etudes Camerounaises in 1935 was the most important institutional evolution of the colonial era. Research after World War I were mostly conducted in agriculture. Numerous experimental stations appeared replacing trial gardens and were in turn, replaced by agronomic research institutes after World War II.

At the independence in 1960, Cameroon had a research infrastructure and showed a great interest in it. However, since Cameroonian researchers were very few, France assured most of the financing and research was supervised by the former colonial country. France continued with this policy while Cameroonian authorities invested in higher education. Even after the creation in 1962 of the Conseil de Recherche Scientifique, no important change occurred in research management. The pre-eminence of French institutions were reinforced with Franco-Cameroonian agreements of 1963.

Appropriation of research performed on the territory really began in 1972 when the country was unified. The first step of this appropriation by the state consisted of the effectiveness of the Office National de la Recherche Scientifique et Technique in 1974. Its mission was to coordinate existing research institutes and to program research activities. This creation was followed by that of nine research institutes. At the same time, management training was successful and national research were led by Cameroonians. Nevertheless, research development was hindered by bureaucratic quarrels, ministries formerly in charge of some research institutes cooperating with the ONAREST with bad grace. The Office had to face other great difficulties: it had to negotiate the "nationalisation" of former French-managed institutes but the biggest problem was to manage this great patrimony with few financial resources and no experience.

The reform of the nine institutes in five ones in 1976 so that the change of the ONAREST in a Délégation Générale à la Recherche Scientifique et Technique in 1979 aim at solving these problems. At the same time, national research started to develop a linkage of research activities with the development of the country. Whereas the deeper integration of the research system in a Ministère de l'Enseignement Supérieur et de la Recherche Scientifique seemed to be efficient, this one was divided in two branches in 1992 with higher education on one side and scientific research on the other side.

Table 4: Evolution of scientific institutions in Cameroon since the colonization

Year founded	Name	Fields	Location	Status	Administrative supervision	Notes
1960	Ecole Nationale Supérieure d'Agronomie	Agronomy	Dschang (1977)			Now, Faculté d'Agronomie et des Sciences Agricoles
1961	Yaoundé university	Sciences, humanities and social sciences, economics and law	Yaoundé			
year founded	name	fields	location	status	administrative supervision	Notes
1962	Conseil de Recherché Scientifique				Presidential Office	
1969	Direction des Ressources Humaines et de la Recherche Scientifique				Department of planning	Renamed Secrétariat Permanent de la Recherche Scientifique et Technique in 1971
1972	Centre National de Recherche Agronomique	agronomy	Ekona			
1974	Office National de la Recherche Scientifique et Technique			Etablissement Public à Caractère Scientifique		
1974	Institut de Recherches Médicales et d'Etudes des Plantes Médicinales	medical sciences	Yaoundé		ONAREST	Kumba Centre de Recherches Médicales + Institut Pasteur

Table 4 Continued

Year founded	Name	Fields	Location	Status	Administrative supervision	Notes
1974	Centre National d'Etudes et d'Expérimentation du Machinisme Agricole	agricultural mechanization	Yaoundé		Department of agriculture	
1974	Conseil de l'Enseignement Supérieur et de la Recherche Scientifique et Technique	definition of research orientation			Presidential Office	
1974	Institut des Cultures Pérennes	agricultural sciences			ONAREST	CNRA + IRHO + IFCC + ORSTOM + IRCA
1974	Institut des Cultures Vivrières et Textiles	agricultural sciences			ONAREST	CEIPS + IRAT + IFAC + IRCT
1974	Institut de Recherche Forestière et Piscicole	agricultural sciences			ONAREST	ex Centre Technique Forestier
1974	Institut de Recherches Industrielles et Technologiques	industry			ONAREST	Laboratory of public works + CENEEMA + Nkolbisson Centre du Bois
year founded	Name	fields	location	status	administrative supervision	Notes
1974	Institut de recherches Zootechniques, Pastorales et Vétérinaires	veterinary sciences	Ngaoundéré		ONAREST	ex Institut d'Elevage et de Médecine Vétérinaire des Pays Tropicaux

Table 4 Continued

Year founded	Name	Fields	Location	Status	Administrative supervision	Notes
1974	Institut de Recherches Géologiques et Minières	natural resources			ONAREST	
1974	Institut National d'Education	education			ONAREST	
1974	Institut des Sciences Humaines	social sciences			ONAREST	IGN + IFORD + DAC research department + INE (1976)
1974	Groupement d'Etudes et de Recherche pour le Développement de l'Agronomie Tropicale	tropical agronomy				grouping of French research institutes, later renamed CIRAD
1976	Institut de Recherche Agricole et Forestière	agriculture, forestry	Ekona		ONAREST	ICP + ICVT
1976	Institut de Recherche Zootechnique	veterinary sciences	Ngaoundéré		ONAREST	ex IZPV
1976	Institut de Recherche sur les Techniques, l'Industrie et le Sous-sol	industry, natural resources			ONAREST	IRIT + IRGM
1977	university centre		Dschang			
1977	university centre		Douala			

Table 4 Continued

Year founded	Name	Fields	Location	Status	Administrative supervision	Notes
1977	university centre		Buéa			
1977	university centre		Ngaoundéré			
1979	Délégation Générale à la Recherche Scientifique et Technique				Prime Minister Office	ex ONAREST
1979	Institut de Recherche Agricole	agricultural sciences	Nkolbisson			ex IRAF
1979	Comité National de l'Homme et de la Biosphère	biology		research committee	DGRST	
year founded	name	fields	location	status	administrative supervision	Notes
1979	Comité National de Développement des Technologies	technology		research committee	DGRST	
1982	Ecole Nationale supérieure des Sciences Agro-industrielles	agro-industry	Ngaoundéré			
1983	Laboratoire National Vétérinaire	veterinary sciences	Garoua		Department of animal production	

Table 4 Continued

Year founded	Name	Fields	Location	Status	Administrative supervision	Notes
1984	Ministère de l'Enseignement Supérieur et de la Recherche Scientifique					ex DGRST
1986	Ministère de l'Enseignement Supérieur, de l'Informatique et de la Recherche Scientifique					ex MESRS, dissolved in 1992
1988	Institut National de Développement Rural	rural development	Dschang			
1989	Centre régional de Recherches sur Bananiers et Plantains	agriculture	Njombé			
1992	Ministère de l'Enseignement Supérieur					
1992	Ministère de la Recherche Scientifique et Technique					
1996	Institut de Recherche Agricole pour le Développement	agricultural sciences				IRA + IRZV

2. The governance of science

Since 1992, scientific research has its own ministry, which proves that authorities show an interest towards research. But this was not necessarily a good decision. Indeed, from 1984 to 1992, higher education and scientific research depended on the same Department. The motives of the division in two different ministries are difficult to explain and go against the global policy of cooperation between university and research. Furthermore, no one is satisfied with this situation, especially academic researchers who feel isolated because research users logically usually address the Ministry of Research but also full-time researchers in research institutes who find it difficult to follow trainings or to cooperate with academic researchers.

3. R&D performers

3.1 Main R&D performers in Cameroon

Only a few big private companies perform agricultural research activities: the Société de Développement du COTON, the Cameroon Development Corporation, PAMOL plantations limited, Hevea Cameroun, CHOCOCAM and Cameroon Sugar Company.

3.2 S&T Human Resources

Three phases can be highlighted in the evolution of national researchers' numbers. Since the independence until the creation of the ONAREST: the state invested more in higher education than in research; from 1965 to 1974: research structures were managed by French research institutes. The era of the ONAREST, from 1974 to 1980: the state tried to coordinate research institutes and to implement a global research policy. Under the Délégation Générale à la Recherche Scientifique et Technique from December 1979 to 1987, the number of national researchers considerably increased thanks to a well-organised system and the attractiveness of the job of researcher: a specific status, high salaries and funding. The recruitment brutally stopped with the economic crisis in 1987. The number of researchers first stagnated and then decreased because of retirements and numerous resignations. In July 2000, 180 researchers worked at the Institut de Recherche Agronomique pour le Développement (almost all were aged more than 40), they were 248 in 1992. In 2006, they are 287; the 100 researchers recently recruited are employed by the ministère de la recherche scientifique et technique at the disposal of the institute. 13.5% of the 287 researchers are women.

Table 5: Number of researchers in agronomic research institutes and the Institut de recherche pour le Développement

Number of researchers	Years	1965	1974	1980	1981	1982	1984	1987
	National		2	120	152	206	250	283
Expatriate		61	84	NA	NA	NA	NA	82

Student numbers had a different evolution: they grew importantly until 1991, then decreased constantly for five years and finally almost doubled in three years. The evolution was not the same in every university: the fall in numbers was huge in the two universities of the capital from 1990 to 1997 whereas all the other universities welcomed more and more students every year. Student numbers increased from 600 enrolments in 1962 to 45 000 in 1991.

Table 6: Evolution of student numbers at university

Universities	92/93	93/94	94/95	95/96	96/97	97/98	98/99	2005/2006
Buéa	807	2,005	3,249	4,099	4,185	4,599	5,38	
Douala	1,635	4,782	7,475	7,301	8,389	9,744	11,376	
Dschang	2,092	1,824	2,248	3,711	4,880	7,342	8,776	11,104
Ngaoundéré	776	789	950	1,225	1,526	2,039	3,082	
Yaoundé I	25,166	19,440	17,756	15,935	13,947	19,276	21,263	
Yaoundé II	13,279	9,586	8,382	5,874	5,747	6,265	10,657	
TOTAL	43,755	38,426	40,080	38,145	36,674	49,265	60,534	

University was reformed in 1993: it occurred in a difficult period when the economic situation was the worst - high unemployment rate, no more recruiting of civil servants, entrance examinations to certain schools closed. Very little funding caused the degradation of training (no journal available, no up to date library, a bad organisation of class work). Teachers' salaries led to a high teacher-student ratio (1 senior lecturer for 1,482 students at the law faculty in 1990-1991). Fees were very high (FCFA 50,000) discouraging people, earning less money than before to send their children to university. The growth of student numbers took off again by 1997. Internationally higher education in Cameroon is considered as an efficient system, despite these difficulties. Cameroonian graduates have been in demand for either teaching or contributing expertise.

4. Sources of research funding

Cameroonian research benefited from the very important support of the state until the middle of the 1980s. In 1974 and the creation of the ONAREST, Cameroon was one of African States which invested most in research. It was possible thanks to oil receipts but also thanks to the state involvement in the assertion of scientific elite. Agricultural research, which has consisted of one of the most dynamic sectors, flourished with the important aid of public funds. The Institut de Recherche Agricole and the Institut de Recherche Zoologique et Vétérinaire were the two principal institutions for agricultural research.

Table 7: Operating budget and equipment grants of the IRA and the IRZV from 1976 to 1986 (million FCFA)

Years	76/77	77/78	78/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86
IRA	982	889	820	1,298	1,486	2,073	3,344	4,481	5,32	5,913
IRZV	77	126	203	281	572	1,282	1,526	1,83	2,642	3,314
Total	1,059	1,015	1,023	1,579	2,058	3,355	4870	6,311	7,962	9,227

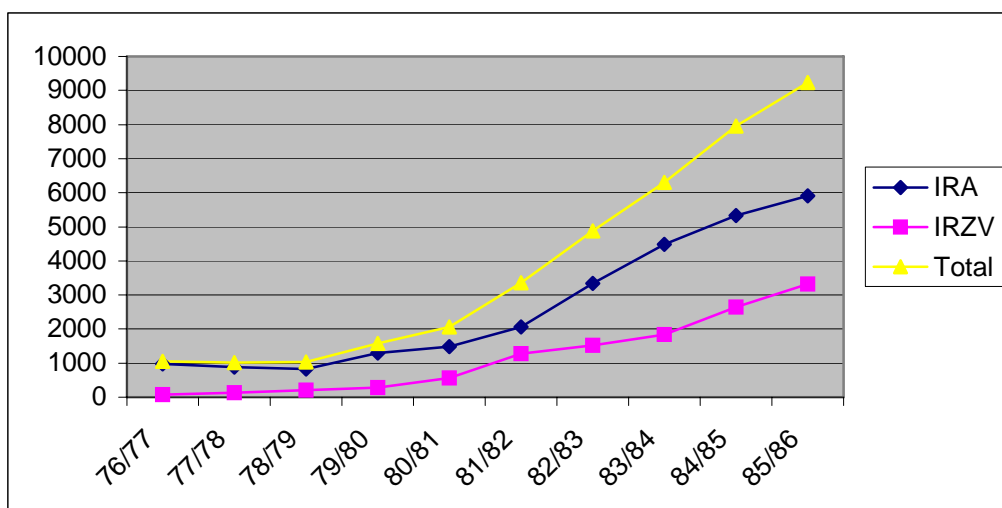
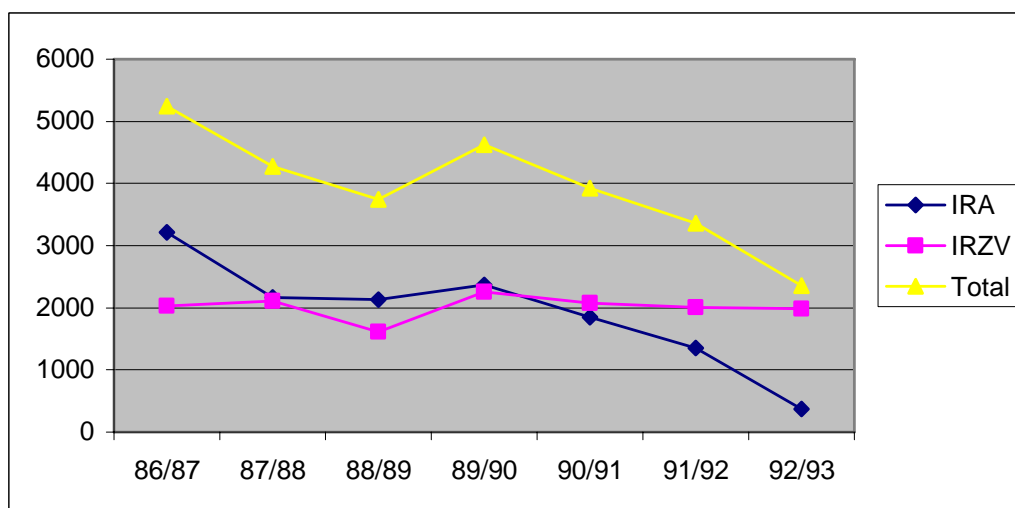


Table 8: Operating budget and equipment grants of the IRA and the IRZV from 1986 to 1993 (Million FCFA)

Years	86/87	87/88	88/89	89/90	90/91	91/92	92/93
IRA	3,216	2,164	2,128	2,373	1,849	1,349	371
IRZV	2,027	2,108	1,616	2,251	2,076	2,011	1,985
Total	5,243	4,272	3,744	4,624	3,925	3,360	2,356



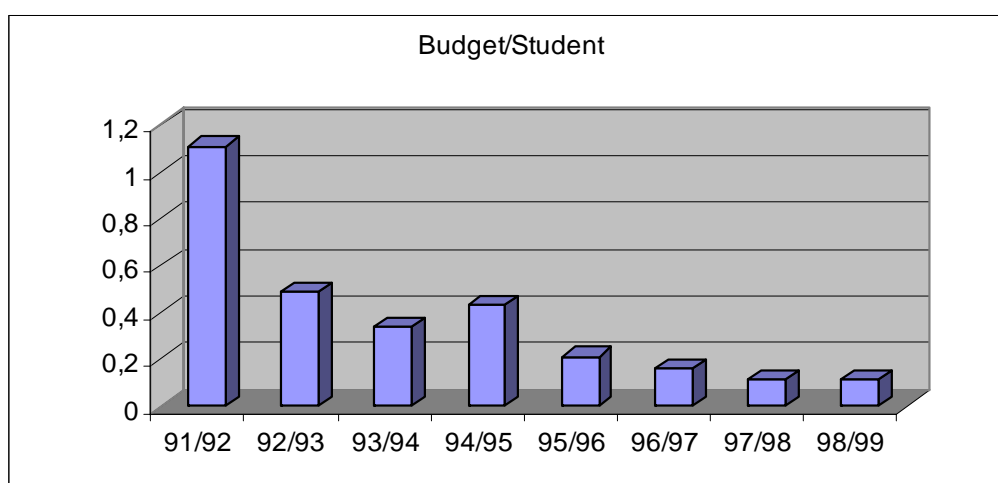
In addition, both institutions earned money from the sell of vegetable and animal production and expertise works. The investment in agricultural research also concerned the large areas committed to the Institut de Recherché Agricole (4,871 hectares) and the Institut de Recherché Zootechnique (10,502 hectares) as experimentation sites.

Funding and staff growth stopped dramatically due to the economic crisis in 1986. No lecturers or researchers were recruited, salaries were not assured and programmes were not financed. The transfer of the management of salaries to the Chancellor of the Exchequer was

designed to stop the haemorrhage but it brought no result. During the most difficult years from 1990 to 1996, every research programme performed with public funds was stopped; year in, year out, only those financed by external organisations went on according to the uncertain payment of salaries. Universities and research institutes were affected by this cessation of financing and recruitment: total funding allocated to universities was divided by ten between 1991 and 1999. The small increase in the academic budget in 1998 did not compensate for the increase in student numbers. Besides, this money was allocated to operating budget and not investment budget and the free management of global funding by the institutions tended to disadvantage research activities that were not highly visible. Conscious of that situation, the government decided to dedicate a specific budget to each research programme, a budget managed by boards of directors. However, funding has been very irregular and credits officially allocated are not always effective. Even in 1998 and 1999 when GDP grew by 5 percent, no significant growth appeared in research funding, which is worrying because it could mean a lack of interest of the authorities in research.

Table 9: Budget per student from 1991 to 1999

Years	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99
Student numbers	45,000	43,755	38,426	40,080	38,145	36,674	49,265	60,534
Budget	49,756	21,477	13,08	17,100	8,075	5,765	5,349	7,052
Budget/Student	1.11	0.49	0.34	0.43	0.21	0.16	0.11	0.11



In the 1990s international funding became indispensable for research activity in Cameroon. Before 1987, 85% and sometimes 95% (salaries included) of research funding was assured by the state, a proportion that fell down to 61% between 1987 and 1993. Political tensions worsened the situation: at a national level, the Institut des Sciences Humaines was dissolved. The centre for research on cartography survived becoming the Institut National de Cartographie. At an international level, the questioned re-election of the president in 1993, some financial backers as the USAID put an end to their cooperation with Cameroon.

Table 10: Evolution of external funding allocated to the IRA and the IRZV (million FCFA)

Years	1987	1988	1989	1990	1991	1992	1993	Total
International Centre for Research on Agroforestry	115.9							115.9
Prêt BIRD	4,969			285	891			6,145
Donation ODA (now DFID)	1,210							1,210
Donation GTZ (Germany)	1,151							1,151
Loan from the Caisse Centrale de Coopération Economique	/	1,250		32	110			1,392
Donation Fonds d'Aide à la Coopération	/	750		12	42,5	100		904.5
USAID (US)	/				4,000			4,000
STABEX	/					115		115
FED	/					188	2,140	2,328
Scotland university	/			20				20
GATSBY	/			26				26
CEE	/			12	16	250		278
IITA	/			46				46
CIRAD	/		1.5					1.5
OUA	/				1			1
Purdu university/USA	/				1.1			1.1
Alabama university	/	0.6						0.6
Belgium	20							20
TOTAL	7,465.9	2	1,5	433	5,061.6	653	2,14	17,755.6

5. Research output

Research output in social sciences does not appear in these figures.

Rate of co-authored publications:	2.25 %
In agricultural sciences:	1.2 %
In medical sciences:	3 %
In physics and engineering sciences:	1.6 %
1,710 authors share in the production (1,184 in medical sciences, 208 in agricultural sciences, 308 in exact and engineering sciences)	

There were few publications compared to research human resources in Cameroon but the results are quite good if one takes into account the catastrophic institutional situation of research over the past 15 years. However, depending on the database considered (PASCAL or SCI) the evolution is not the same. The SCI recorded a constant growth of the number of publications even at the climax of the crisis in 1993. The structure of output per domain more suits the model of English-speaking African countries, of which a high rate of publications in agricultural sciences is characteristic. The low rate of publications in exact and engineering sciences compared with other African countries is typical of central Africa.

In medical sciences, a larger number of publications were recorded due to the production of very active individuals. In agricultural sciences and exact and engineering sciences, research output was less concentrated: there are institutional collaborations but no real community. There are few publications, the domain being suited to consultancy activities, which are far more lucrative.

Table 11: Research output per field and institution (1991-1997)

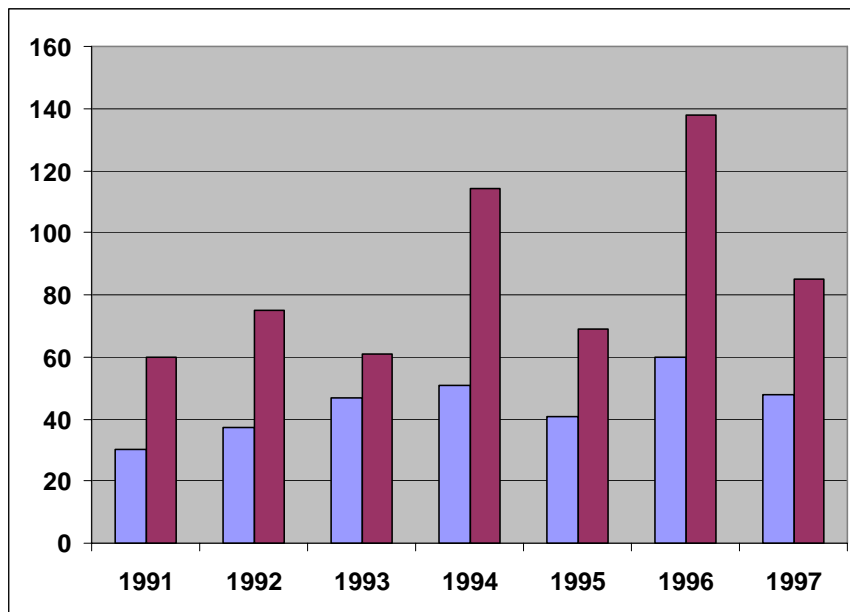
Fields / Institutions	Agricultural sciences	Clinical sciences	Medical biology	Biology (others)	Geosciences	Physics	Chemistry	Maths	Engineering sciences
Yaoundé university (232)	17	18	74	77	98	7	3	7	43
ORSTOM (150)	45	10	87	54	60				
Douala University (8)		30	64						
Pasteur Institute (66)		4	98	6					
OCEAC (51)		27	59						
IRA (32)	34		4	11					
Veterinary school (26)	15		4	15					
ENSIAC (14)	4				8		1		10
Dschang university (6)								3	6
Ecole Polytechnique (6)	7			3					
Research institute on Plants (6)	7			3					

Table 11 Continued

Fields / Institutions	Agricultural sciences	Clinical sciences	Medical biology	Biology (others)	Geosciences	Physics	Chemistry	Maths	Engineering sciences
ICRAF (6)	7			3					
CHU Yaoundé (6)	7			3					
Firms (6)	7			3					
Ministries (6)	7			3					
Others	29	20	55	18	11			2	5
	Agriculture, breeding, forestry	Public health	Pharmacology; Infectious diseases	Animal biology					Energy
Total	151	167	540	185	177	7	4	12	64

International cooperation output was very high during this period. Data come from SCI database. Two thirds of the articles depended on international collaborations. It highlights the significance of cooperation with other countries in Cameroon. Furthermore, association with foreign authors is necessary for the publication in international journals. This dependence increased in the period focused.

Research output without and with publications written by international teams (1991-1997)



6. The profession of researcher

The beginning of the 1980s was the golden era for Cameroonian researchers, their salaries were comparable to French researchers' ones. The elaboration of a specific status for researchers signed in July 1980 also attracted many people to the profession. Some correspondences between the grades of teacher-researchers at university and full-time researchers were provided for facilitating exchanges and maximising the good use of human resources. This major step led to the great increase in the number of researchers in the 1980s. Furthermore, it acknowledged the existence of a community. A new status of researcher developed and provided for a greater harmonisation of the grades at university and outside.

The economic crisis led to a halt in financial support of research institutes and a catastrophic decrease in subsidies to the academic world but also caused a dramatic reduction in the amount of researchers' salaries so that since this time they have got to find extra resources they usually would get with consultancy work for foreign NGOs or financial backers. This critical situation gets researchers and authorities to look for different types of research structures and activities. Three steps can be defined in the evolution of salaries: before 1993 and the decrease for salaries of civil servants, after that decision and after 2003 when the state raised salaries again.

Table 12: Salaries (francs CFA)

Rank	Echelon	Index	Gross monthly income		
			1992	1993	July 2000
Junior researcher	1	465	240,667	123,798	138,975
	2	530	269,936	132,362	149,050
Researcher	1	605	302,723	142,243	160,675
	2	665	322,010	150,148	169,975
	3	715	341,296	156,736	177,725
Senior researcher	1	715	341,296	156,736	177,725
	2	785	368,296	165,959	188,575
	3	870	401,084	177,157	201,750
	4	940	428,085	186,380	212,600
	5	1 005	453,156	194,943	222,875
	6	1 050	470,514	200,872	229,650
Research manager	1	1 050	470,514	200,872	229,650
	2	1 115	495,587	209,436	239,725
	3	1 140	505,230	212,730	243,600

Consequently, many researchers left their jobs. Those who staid are often demotivated. However, those who left rarely emigrated (in 30 years out of 60 researchers supported by the International Foundation for Science, only one of them immigrated into the USA when he retired). They prefer finding another job in their country in both public and private sector. Others keep their job but try to find other resources while doing consultancy or teaching in the whole continent (even if 8000 graded students were unemployed in 2000, Cameroonian degrees are internationally acknowledged as good ones and Cameroonian teachers and researchers are in high demand). If they still cannot feed the whole family, another member of the family works as a taxi driver or a farmer, etc. Besides, national researchers do not enjoy a great social position.

There are few women involved in research in Cameroon. In 1999, they were 18 out of 204 researchers in the Institut de Recherché Agricole pour le Développement i.e. 8.9 %, in 2006 they represented 13.5% of the IRAD research force. In 1997/1998 in sciences faculties, there were 29 women out of 214 teachers (13.5%).

Research is often mentioned in the press and the media. Scientific Conferences are introduced, experts are asked during a spectacular event; there are scientific programmes broadcasted on the radio and journals of scientific popularization. Communication has been one of the principal goals of the Ministry. It is embodied by the National Programme of Research and Agricultural Popularization recently implemented.

7. Informal S&T structures

A scientific community mostly emerged during the second half of the 1980s when national research was at its climax. Many scientific associations exist but cannot really run because of lack of funding: members of the scientific community cannot contribute because they already do not have enough money to survive. These associations established many scientific journals that are not published any more for the same reasons. The majority of scientific and technical journals disappeared after the two first issues. Those, which are running well, are supported by foreign institutions.

7.1 Listing of some scientific journals in Cameroon

- *Revue Science et Technique (série Science de la Santé)* published by the Institut de Recherches Médicales et d'Etudes des Plantes Médicinales (IMPM), the last issue appeared in 1990.
- *Revue Science et Technique (série Science de la Terre)* published by the Institut de Recherches Géologiques et Minières (IRGM), the last issue appeared in 1990.
- *Revue Science et Technique (série Sciences Agronomiques et Zootechniques)* published by the Institut de Recherche Agricole pour le Développement (IRAD) the last issue came out in 1990.
- University of Yaoundé I
- *Revue de Biosciences* (Quarterly journal ; Vol 7 n°2 et 3 published in 1990.)
- Annals of the Faculté des Sciences : série Science de la Terre
- Academic Annals of the Sciences de la Santé
- Conseil Phytosanitaire Inter africain / Organisation de l'Union Africaine²
- *Revue africaine de protection des plantes* N°1 published in 1993.
- Ecole Normale Supérieure
- Journal : *le Savoir*
- Dschang University
- Journals : *Sciences Agronomiques et Développement*
- *Le Gerموir*
- *Revue des Productions animales du Cameroun* (N°1 paru en 1991. N°3 paru en 1995)
- Association Camerounaise des Biosciences
- *Cameroon Journal of Biological and Biochemical Sciences*
- Comité National de Géographie du Cameroun
- Bulletin de liaison
- Réseau du Programme " Arbres forêts et Communautés Rurales"
- Special issue (15 et 16), déc. 1998
- MINREST (IRAD, Herbar National)
- *Flore du Cameroun* ; 105 familles décrites et publiées dans 32 fascicules
- Programme TROPENBOS Cameroun (PTC), Directeur : Dr P. Schmidt
- *TAM TAM* : Bulletin trimestriel d'information n°3 paru en février 2000, publié avec la collaboration de l'IRAD et de l'ONADEF.
- *Revue de la Médecine Hospitalière au Cameroun*
- Association Camerounaise des Médecins

² Published by the Secrétariat Scientifique du Conseil Phytosanitaire Inter africain de la Commission Scientifique, Technique et de la Recherche of the Organisation de l'Unité Africaine, based in Yaoundé.

- *Journal du Médecin*

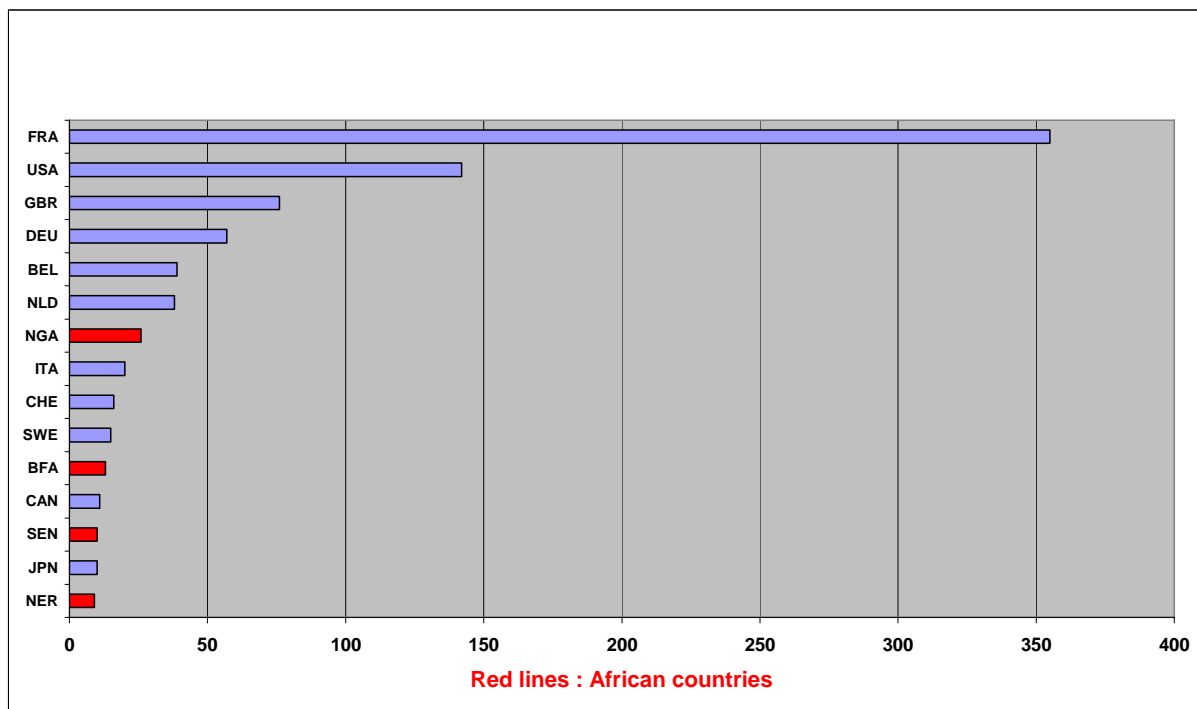
7.2 *Listing of some other scientific associations*

- National associations
- Association des Mathématiciens Camerounais (exists but is not active)
- Carrefour des Géographes (exists but is not active)
- Société de Cardiologie (very irregular running)
- International associations
- Association des Géologues et Géographes Docteurs des Universités Françaises (French support)
- Observatoire du Changement et de l'Innovations Sociales au Cameroun (research network originated by a researcher in the Institut de Recherche pour le Développement)
- Regional associations
- Groupe Inter Africain de Recherche et d'Analyse en Géométrie Appliquée (Benin, Cameroon)
- Réseau Inter-Africain d'Etudes Urbaines (research network currently inactive because of the different conflicts in Central Africa).

8. **Scientific cooperation and agreements**

Because of almost no public funds devoted to research, most activities are performed in cooperation with foreign institutions or teams. In 1999, the Ministry for Research organised a conference gathering Research Ministers from Western and Central Africa aimed at giving back to African people the results of African research. Nevertheless, NGOs are increasingly present and international cooperation is more and more involved in Cameroonian research output.

Number of collaborations (1991-1997)



France was by far the first foreign partner. It is logical considered the high numbers of expatriate researchers working for specialized institutions (Institut Pasteur Outre Mer, Institut de Recherche pour le Développement, institut français de recherche agronomique au service du développement des pays du Sud). Even if the United States stopped all cooperation by 1993, it remained the second country as far as the amount of collaborations from 1991 to 1997 is concerned. Then came European countries; African cooperation was not very much developed.

Some donor agencies (World Bank, IFAD and AfDB) have financed some projects within the past ten years or so in Cameroon's agricultural sector.

9. Conclusion

The elaboration of a national research system helped performers to form an active community of many teachers and researchers producing significant output. A further involvement of the state could help their social recognition and cooperation from the economic sector. Cameroonian research is quite well organised even if there are too many structures compared with the available financial resources. Furthermore, communication between universities and research institutes is limited. In contrast, many partnerships have been concluded with foreign institutions, which have been the major financial backers since 1987 and the economic crisis. Especially NGOs have played a reinforcing part in research funding and programme support. However, their presence hinders the development of a national research capability which is adapted to local needs. However, policies were initiated towards a closer linking between research and development: Popularization of research results and diffusion of national research progress by the media are also a priority but results of such policies are meagre: people, especially the youth, feel very sceptical about the ability of Cameroon to produce useful innovations for development.

Consultancy activities have flourished, sometimes to the detriment of research because they are much more lucrative. It could be an important source of scientific information if the majority of analysis demanded were not routine activity. One of the major changes necessary to effect progress in Cameroonian research is a negotiation with international financial backers to have the possibility to privilege projects in agreement with national research programmes. Cameroon must also recruit

teachers and researchers again if the state does not want to lose the existing scientific community. Some small groups of researchers have succeeded in managing their laboratories on their own. Their autonomy and existence mostly relies on international networks researchers have developed. It has been the case in chemistry and especially organic chemistry.

10. Annotated bibliography

Websites :

<http://www.commissionforafrica.org/english/consultation/submissions/ro/sb-nov-dec04-041.pdf#search=%22IRTISS%20Cameroun%22> - A documented report on Cameroonian research. The main source of information comes from the International Foundation for Science. The very recent situation (2004) has been described and analysed to propose directions of development while comparing with other systems existing.