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Research Institutions:  
Côte d'Ivoire's Centre  
National de Recherche  
Agricole**

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# Acronyms

|                  |  |
|------------------|--|
| ANADER           | <i>Agence Nationale d'Appui au Développement Rural</i>   |
| ANOPACI          | <i>Association Nationale des Organisations Professionnelles Agricoles de Côte d'Ivoire</i>   |
| CGIAR            | Consultative Group on International Agricultural Research  |
| CIRAD            | <i>Cooperation Internationale en Recherche Agronomique pour le Développement</i>   |
| CIRES            | <i>Centre Ivoirien de Recherches Economiques et Sociales</i>   |
| CIRT             | <i>Centre Ivoirien de Recherche Technologique</i>  |
| CNDA             | <i>Comité National de Développement Agricole</i> or National Agriculture Development Committee   |
| CNRA             | <i>Centre National de Recherche Agricole</i> (National Center for Agricultural Research)   |
| CORAF/<br>WECARD | <i>Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricole</i> or West and Central African Council for Agricultural Research and Development |
| CRBP             | <i>Centre Regional de Recherche sur les Bananiers et Plantains</i>   |
| DUS              | <i>Droit Unique de Sortie</i> (Single Exit Tax)  |
| EEC              | European Economic Community  |
| ENSA             | <i>Ecole Nationale Supérieure Agronomique</i>  |
| EU               | European Union   |
| FDFP             | <i>Fonds de Développement de la Formation Professionnelle</i> or National Fund for Professional Training   |
| FNDA             | <i>Fonds National de Développement Agricole</i>  |
| GOCI             | Government of Côte d'Ivoire  |
| GDP              | Gross Domestic Product   |
| IARC             | International Agricultural Research Center   |
| IDA              | International Development Association  |
| IDEFOR           | <i>Institut des Forêts</i>   |
| IDESSA           | <i>Institut des Savanes</i>  |
| IRHO             | <i>Institut de Recherches sur les Huiles de Palme et Oléagineux</i>  |
| IMF              | International Monetary Fund  |
| MINAGRA          | Ministry of Agriculture and Animal Resources – <i>Ministère de l'Agriculture et des Ressources Animales</i>  |
| MESRS            | <i>Ministère de l'Enseignement Supérieur et de la Recherche Scientifique</i> or Ministry of Higher Learning, Research and Technology                                 |
| NARS             | National Agricultural Research System  |
| ORSTOM/IRD       | <i>Institut Français de Recherche Scientifique pour le Développement en Coopération</i> , renamed as <i>Institut de Recherche pour le Développement</i> in 1998)     |
| OPA              | <i>Organisations Professionnelles Agricoles</i> or Farmers' Organisations  |
| PNASA            | <i>Programme Nationale d'Appui au Système Agricole</i> , National Agricultural Services Support Project, World Bank  |
| PNASA II         | <i>Programme Nationale d'Appui au Système Agricole II</i> , National Agricultural Services Support Project II, World Bank  |
| SFI              | Sustainable Financing Initiative   |
| SPAAR            | Special Program for African Agricultural Research  |
| SRO              | Sub-Regional Organization  |
| TEC              | <i>Tarif Extérieur Commun</i>  |
| TVA              | <i>Taxe sur la Valeur Ajoutée</i> or Value Added Tax   |
| UEMOA            | <i>Union Economique et Monétaire Ouest Africaine</i>   |
| USAID            | United States Agency for International Development   |
| WARDA            | West African Rice Development Association  |

## Executive Summary

Agriculture accounts for 28 percent of gross domestic product in Côte d'Ivoire and employs over half of the workforce. With more than 75 percent of the poor living in rural areas, agriculture will continue to be the major source of economic growth for a significant segment of the population. The agricultural sector is in reality made up of two sub-sectors: 1) export agriculture, which has been historically well organized and supported by the government and donors; and 2) food agriculture, which has largely been left to its own devices. The country's dependence on commodities for export revenue made it vulnerable to the low prices of primary commodities in the late 1980s and 1990s. State-owned enterprise production costs increased, export markets faltered, and financial policy reforms were instituted through an International Monetary Fund structural adjustment program. Among the measures taken were the dissolution of a number of public companies. Considerable progress was made during the mid-1990s in reducing financial imbalances, controlling inflation, and liberalizing the economy.

In April 1998, three major research organizations, each of which had their roots in research on export crops, were merged to form a privatized *Centre National de Recherche Agricole* (CNRA). This case study examines agricultural research funding in Côte d'Ivoire, and tells the story of the creation of this new semi-autonomous private institution. In addition to changes in staffing and research priorities, CNRA has been designed to be primarily self-supporting, drawing the majority of its financing from both small and large producer organizations. This study traces the formation of CNRA, with an emphasis on policies and financing mechanisms.

CNRA is in charge of all types of agricultural research for perennial crops (coffee, cocoa, oil palm, rubber tree, etc.), annual crops (rice, maize, roots and tubers, sugar cane, etc.), animal production (livestock and fisheries), forestry research, in-field production systems, and post-harvest research (food conservation and processing). CNRA consists of 13 research stations in different agro-ecological zones. Although privatized, CNRA still falls under the supervision of the Ministry of Higher Education and Scientific Research. This dualism is intended to make CNRA operate as a private research institute, but with a still significant mandate to undertake public research. A large role has been assigned to farmers, commodity associations, and agribusiness to incorporate their interests into the orientation, management and priority-setting of research activities.

The French government has been a major contributor to agricultural research in Côte d'Ivoire. Other European partners have been involved as well, whether directly with national research institutes or through their support of the International Agricultural Research Center programs in the country. Over the last ten years, World Bank projects have had a profound effect on extension, research, and producers' organizations. The most recent project is the *Programme Nationale d'Appui au Système Agricole II* (PNASA II), which supports the privatization of both extension services and agricultural research. Under PNASA II, the National Agricultural Development Fund (FNDA) was set up as a sustainable financing mechanism for extension and research. A 24-member Agriculture Development Committee will govern FNDA and include stakeholders from government, the private sector, and research and technology service providers. The private sector lobbied for some reduced tax obligations in exchange for contributing to the fund and for operational control.

Financing for the CNRA annual budget was intended to be: 42 percent from the World Bank (under the PNASA II project); 35 percent from resources generated by CNRA through research contracts,

commercialization of agricultural products, and research results; and 23 percent from the government. In the first few years covered by this study, funding has fallen far short of targets. A lack of government funding and the delay in establishment of the FNDA have forced CNRA to survive almost solely off of its research contracts and products for the past several years. Roughly 71 percent of resources came from sale of products and research contracts instead of the planned 35 percent. The World Bank's contribution to the CNRA program was planned as matching funds with the government. However, the government has been able to supply very little in the way of actual funding. Some counterpart contribution in the form of waived tariffs and taxes has been recognized by the World Bank and funds made available accordingly.

CNRA has been privatized, but its mandate retains a number of "public good" elements, such as gender issues, environmental concerns, and poverty reduction. Two issues emerge from CNRA's mandate for public good research. The first is, who pays for it? Clearly, there is a strong case for government to support the cost of research that falls into this category. The second is, who captures the value from this research and associated technologies? In the past, the government has advocated open access to publicly-funded research results. CNRA researchers and managers have become very aware of the monetary value of their results and the need to use them as sources of funding. However, the government is reluctant to allow CNRA to market its research results and protect them under license or patents. One new function CNRA created is an Advisor on Intellectual Property Protection to explore these issues. The protection of intellectual property rights in agriculture is complex, and is in its infancy in Côte d'Ivoire.

There are a several policies that will become increasingly important to CNRA in the near future. Perhaps the largest topic of discussion apart from the FNDA is the recent imposition of new taxes and tariffs and their effect on agriculture. A concern here is that costs of agricultural inputs will rise sharply. The direct impact of the new taxes for CNRA is the increased cost of importing equipment and materials needed for maintenance and upkeep of their research stations, laboratories, and other programs.

CNRA has made important steps toward restructuring its personnel, reorganizing and adapting its mode of operations, working with its stakeholders, and setting up the necessary systems and mechanisms to ensure sustainable financing in the future. Despite political and economic upheaval, CNRA staff and stakeholders have made commendable progress. Across Africa, CNRA is being looked to as a potential model for other countries. While there are promising signs of success, caution is in order. The first steps along CNRA's path toward institutionalization and sustainability have been rocky. The most critical risk factor appears to have been the domino effect created by the reduced level of funds available, and the delays in enabling legislation caused by the recent political instability. The cumulative effect has imperiled CNRA's viability when the newly created institution is in the particularly vulnerable start-up phase.

It is too early to fully evaluate CNRA's achievements and usefulness as a model for other African countries. Ongoing questions of reorganization and decentralization, privatization, expectations and contributions of CNRA's stakeholders, and other financial issues remain unresolved. Several of the most salient issues and related questions are discussed.

CNRA faces some trade-offs and possible conflicts in becoming demand-driven, particularly under conditions of resource scarcity. Increasing their reliance on private commodity groups for funds means more such groups also have more power over the type of research that gets funded. Depending

on the mechanism, it may also mean the private sector can withhold funding for CNRA. Its clients need to understand the value they are getting from the research, understand how research is conducted, and participate in determining research priorities. However, will all beneficiaries be integrated into the research process, or will it be dominated by export-oriented commodity groups?

There will continue to be serious institutional issues related to staff incentives, intellectual property rights, etc. as CNRA pursues its transition from public sector agency to private sector organization. Will there be provisions for staff incentives based on performance? Researchers who help garner resources for the institution should be rewarded with monetary and professional incentives. And, there are tensions and opportunity costs for CNRA researchers in responding to public sector needs when the drive to generate external support pushes them to accord higher priority to responding to private sector stakeholder demands.

The FNDA, in keeping with international experience with competitive funds, has the potential to be a financial mechanism that can reinforce incentives for results-based research management and responsiveness to demand. The effectiveness of the FNDA will depend upon committee member rotation, appropriate benchmarks, priority-setting, monitoring and evaluation systems, and strategies for adaptation to changing needs.

Given the current policy and financial environment, and despite its efforts in both institutional reform and continued provision of services, performance triggers for second stage of World Bank funding will be difficult to attain by the end of 2001. The economic and political environment of Côte d'Ivoire has severely delayed the effective implementation of the first phase of PNASA II. The scheduled Phase I evaluation could be used to address these problems, revise implementation schedules, and specify indicators as needed.

# 1. Introduction

Agricultural research has made major contributions to economic growth and the alleviation of poverty, yet research systems face declining and unstable public funding, both from national and international sources. The impacts of the funding crisis on African national agricultural research systems (NARSs) have been especially acute and detrimental. The efficiency and effectiveness of the NARSs have plummeted, reflecting the negative effects of degraded capacity, stop-start programs, and brain drain as researchers leave the system. Dependence on international donors to fill the funding gaps has increased, even as the level of donor funding has dropped. As many observers have noted, the current situation is financially unsustainable. It also puts at risk the development progress of African nations, given their dependence on their agriculture sectors and natural resource base.

Over the past several years, some African NARSs have begun experimenting with new financial mechanisms, and have undertaken institutional reforms to restructure and revitalize. The Special Program for African Agricultural Research (SPAAR) recently surveyed national and sub-regional research organizations across Africa to determine progress with these experiments. In a multi-country analysis SPAAR uncovered examples of efforts to involve the private sector through export commodity taxation and to move towards performance based funding through competitive agricultural research funds, commercialization, and contract research. However, beyond the SPAAR study and some informal canvassing, little is known about the incidence, nature and success of financial mechanisms and plans for mobilizing and allocating funds for agricultural research and technology transfer activities in Africa. Even less is known about the institutional and policy factors conditioning their success or the influence these innovations may be having on the agricultural research agenda.

## 1.1. SFI Case Studies

To fill this knowledge gap, the Sustainable Financing Initiative (SFI), in collaboration with its African partners and with USAID funding, undertook a series of country case studies to assess experience with different financial mechanisms, and to identify institutional and policy-related factors that have an impact on the use of these mechanisms. The viability of NARS depends on more than funding. The legal and administrative context in which these research organizations operate influences their capacity to capture and attract funding, gain financial returns from their research, and motivate staff to generate valuable and valued results. Functioning institutional and organizational structures as well as a supportive policy and administrative environment are also necessary (Bingen and Brinkerhoff 2000).

This case study examines agricultural research funding in Côte d'Ivoire, focusing on the creation of a new semi-autonomous private institution, the *Centre National de Recherche Agricole* (CNRA). Discussed below are the following topics:

1. Background historical, national, and institutional issues related to agricultural research in Côte d'Ivoire;
2. The institutional context of CNRA;
3. Selected financial data supporting the CNRA case;
4. Selected institutional policies that face CNRA in the near future; and
5. Issues and ongoing questions.

## 1.2. The Case of Agricultural Research in Côte d'Ivoire

In Côte d'Ivoire, agriculture contributes about 28 percent to gross domestic product (GDP) and employs over half of the workforce. With more than 75 percent of the poor living in rural areas, agriculture will continue to be the major source of economic growth for a significant segment of the population. There is a duality in the agricultural sector of Côte d'Ivoire that is aptly pointed out by Traoré (1990). The sector is in reality made up of two sub-sectors: 1) export agriculture, which has been historically well organized and supported by the government and donors; and 2) food agriculture, which has largely been left to its own devices. Export crops are an important part of Côte d'Ivoire's economy and export revenue portfolio, but the food agriculture contribution to GDP has been close to half of the total production of the agricultural sector. Crops like rice, maize and other cereals, yams, cassava, plantains, and taro are important staples for the rural economy. The importance of the food agriculture sub-sector is reflected in a call by the Government of Côte d'Ivoire (GOCI) for a "return of the youth to the land" in the 1990s when urban areas were congested by the influx of workers to Abidjan and other cities.

Agricultural research needs to support both export agriculture and food agriculture, and doing both will not be without its challenges. The newly formed CNRA has been dramatically restructured to better serve the agricultural population – in effect, the food agriculture population. In April 1998, the three major research organizations, all of whom have their roots in research on export crops -- the Savannah Research Institute (*l'Institut des Savanes* or IDESSA), the Forest Research Institute (*l'Institut des Forêts* or IDEFOR), and the Ivoirian Center for Technology Research (*Centre Ivoirien de Recherche Technologique* or CIRT) -- were merged to form CNRA. In addition to changes in staffing and research priorities, CNRA has been designed to be primarily self-supporting, drawing the majority of its financing from both small and large producer organizations. This study traces the formulation of CNRA to date, with an emphasis on policies and self-financing mechanisms needed for its ultimate institutional effectiveness.

## 2. History, Economy, Policies and Institutions

Agricultural research is intertwined with the colonial and post-independence periods of Côte d'Ivoire's history. The colonial economy relied heavily on export crops. However, the post-independence period has seen an increasingly critical need for locally grown crops to feed the Ivoirian people. An initial historical context below provides a backdrop of some of the recent policy decisions for agricultural research. Secondly, recent national economic and political events are noted to emphasize the ever-changing national policy environment. A brief section outlines the larger national agricultural research system (NARS) in which CNRA operates. Finally, the contributions of international donors and partners to agricultural research in Côte d'Ivoire are discussed.

### 2.1. Historical Context of Agricultural Research

The development of the agricultural sector is inextricably linked to the development of Côte d'Ivoire.<sup>1</sup> During the French colonial period before World War II, large plantations and accompanying agricultural experimental stations were created in support of cocoa, coffee, and oilpalm production. After World War II, numerous commodity stations were set up by the colonial government to aid with research, production, and exploitation of tropical forests, cotton, coconut, fruits, and livestock. At the time of independence, the GOCI lacked the research and managerial capacity to operate the agricultural research facilities, and bilateral agreements were signed with France resulting in very strong French influence on agricultural research for decades to come.

Parastatal bodies were a critical part of the transition from colonial to independent status. These organizations were (and many still are) funded in part or in full by the government, and provide such services as extension, development, credit, etc. for a specific commodity. Many parastatal bodies contract with research stations to conduct research, and have been a significant source of income for funding of commodity research. With the switch from commodity to regional stations, many parastatals have been closed or have significantly modified their operations.

The formation of research institutes in Côte d'Ivoire reflected an agro-ecological zone approach to research and a gradual weaning away from the French influence. CIRT was established in 1981 for the purpose of agricultural processing research. In 1982, IDESSA was formed, subsuming under its management many of the local research stations working in the savannah zone. In 1992, IDEFOR was created to provide an institutional umbrella for a number of research institutes working in the tropical zone of Côte d'Ivoire. Both CIRT and IDESSA were organized under the *Ministère de l'Enseignement Supérieur et de la Recherche Scientifique* (MESRS).

From independence to the 1990s, policies and structures developed to maximize the export potential of Côte d'Ivoire's agriculture. Tropical forests were cleared to provide more room for plantations. Cocoa production, for instance, increased fourfold from 1960 to 1980. Land tenure policies

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<sup>1</sup> An excellent review of the agricultural history of Côte d'Ivoire is offered by Roseboom and Pardey (1994), and this section draws on their account.

encouraged the development of land into plantation agriculture, poorly paid agricultural laborers were used from neighboring African countries, and plantation mechanization was encouraged (Ladipo 1990). Many of the export agricultural businesses were virtual monopolies of the state, or were arranged through government contracts with (mostly) French, Swiss, or other European multinationals.

The country's dependence on commodities for export revenue made it vulnerable to the low prices of primary commodities in the late 1980s and 1990s. Ladipo (1990) notes that state-owned enterprise production costs increased, export markets faltered, and financial policy reforms were instituted through an International Monetary Fund (IMF) structural adjustment program to encourage fiscal recovery. Among the measures taken were the dissolution of a number of public companies (including those involved with agriculture).

## **2.2. Current Economic and Political Situation**

Considerable progress was made in Côte d'Ivoire during the mid-1990s in reducing financial imbalances, controlling inflation, and liberalizing the economy as a result of structural adjustment. The latest adjustment program encourages private sector development, and regional development and decentralization to promote local investment and strengthen rural land tenure. Agricultural policy reforms include producer pricing reforms for coffee and cocoa, further liberalization of the cocoa and coffee sectors, and increased attention to the problems of the environment and degraded tropical forests. However, despite this progress, the Ivoirian economy remains weak.

Political events negatively impacted Côte d'Ivoire's economic recovery. On December 24, 1999, a military coup ousted the president, which was the first government overthrow in the country's history. The interim government held presidential and legislative elections held in October and December 2000, leading to the accession to the presidency of Laurent Gbagbo, ending ten months of military rule. Economic growth was weak in 2000 due to financial constraints, low prices of cocoa and other key exports, and instability caused by the political situation. Effective March 1, 2001, the World Bank placed all loans and International Development Association (IDA) credits to, or guaranteed by, the GOCI in non-accrual status, meaning that payments were overdue by more than six months.

To mitigate the economic decline, the GOCI sent a letter to the IMF in August 2001, stating that, "the government is determined to undertake in 2001 all the actions necessary to reform the economy." In an attached Memorandum of Economic and Financial Policies, immediate policy reforms included the reinforcement of the decentralization policy through appropriations to territorial administration, and the enforcement and/or settling of claims against cocoa exporters in arrears. The document also noted that during the period of July-December 2001, strict measures would be taken vis-à-vis the cocoa and coffee sectors. These would include short-term changes in the cocoa and coffee marketing system, the establishment of a regulatory framework, and a pricing mechanism to ensure that farmers received adequate compensation to cover their costs. Hopefully, these reforms will stimulate export agriculture and consequently funding for agricultural research.

## 2.3. Agricultural Research Institutions in Côte d'Ivoire

At present, the NARS in Côte d'Ivoire includes governmental, academic, and international institutions, which are reviewed below. CNRA is discussed separately and in depth in Section 3.

The two ministries principally involved in agricultural research are the Ministries of Agriculture and Animal Husbandry (*Ministère de l'Agriculture et des Ressources Animales* – MINAGRA), and Higher Learning, Research and Technology (*Ministère de l'Enseignement Supérieur et de la Recherche Scientifique* – MESRS). MINAGRA has among its components the agricultural extension services (*Agence Nationale d'Appui au Développement Rural* – ANADER) and a number of centers and laboratories that are applied research oriented.<sup>2</sup> The portfolio of MESRS is predominantly higher education, but includes CNRA and the institutes of the *Centre de Coopération Internationale en Recherche Agronomique pour le Développement* (CIRAD).<sup>3</sup>

University-based agricultural science courses began in 1965 with the establishment of the *Ecole Nationale Supérieure Agronomique (ENSA)* as part of the University of Abidjan (Roseboom and Pardey 1994). Other departments, most notably the *Centre Ivoirien de Recherches Economiques et Sociales (CIRES)*, are involved with agricultural research. In oil palm research, CIRAD is working to identify the needs of smallholder organizations through research agreements with the University of Bouaké, and is cooperating with the Laboratory of Rural Economics and Sociology of the same university on a national project of rural infrastructure and land management.

Through a number of channels, including those sponsored by the World Bank and the Consultative Group on International Agricultural Research (CGIAR), regional and international agricultural research entities are important partners for Côte d'Ivoire. The West African Rice Research Institute (WARDA), for instance, is located in M'be, and collaborating programs are common with CNRA researchers.<sup>4</sup> Côte d'Ivoire is also a member of CORAF/WECARD, a sub-regional organization that serves as a coordinating network for researchers throughout Central and West Africa.<sup>5</sup>

## 2.4. Donors and Partners in Agriculture

As noted in Section 2.1, the French government, both before and after independence, has been integral to the agricultural development of Côte d'Ivoire and has especially supported agricultural research. Roseboom and Pardey (1994) note, for instance, that French researchers from CIRAD and ORSTOM were critically important to both IDESSA and IDEFOR as recently as the early 1990s. Bilateral research agreements, such as the one signed between the major Ivoirien institutes and CIRAD/ORSTOM in 1997 committed the two countries to partner on research programs of their common interest in, among other areas, agriculture (La lettre d'Agropolis 1997). According to "CIRAD 2000," the French-based research and development group is working with Ivoirien researchers on sugar cane variety trials, fatty acid-free content in cocoa butter for export, and

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<sup>2</sup> See <http://www.pr.ci/gouvernement/ministeres/agr/index.html>

<sup>3</sup> See <http://www.pr.ci/gouvernement/ministeres/ens/index.html>

<sup>4</sup> See <http://www.warda.cgiar.org/>

<sup>5</sup> See <http://www.coraf.org/>

identification of higher yielding coffee hybrids and experimentation with cropping densities. In the private sector, French-based firms have been important investors in agricultural industry, including banana production (US Department of Commerce 1999).

Other European partners have been involved in agricultural research in Côte d'Ivoire, whether directly with national research institutes or through their support of the International Agricultural Research programs in the country. Wageningen University in the Netherlands has worked in Côte d'Ivoire on modeling weed-crop competition in rice fields, and Dutch funding has supported studies on sustainable agricultural production and market development (CGIAR 2001). The United Kingdom has supported WARDA for disease research in rice. Funding from the French and European Economic Community has supported CNRA's coordination of a cotton network in West Africa. The Swiss private sector has been involved in agro-processing research and cooperation, and Swiss development funding has supported cattle health and productivity. Finally, Germany's Office of Technical Cooperation has been involved in many forestry and ecologically-based research projects in the tropical zones of Côte d'Ivoire.

Over the last ten years, World Bank projects in agriculture have had a profound effect on extension, research, supporting entities such as communications networks, and producer organizations. The National Agricultural Services Support Project (PNASA) was implemented from 1994-1997, and emphasized the restructuring of the extension service (ANADER) and decentralization of the functions of the MINAGRA so as to better serve the rural agricultural population (see Glounaho 2000). Among the lessons of PNASAs experience were the following: (a) it is can be difficult to make public services truly responsive to farmers needs; (b) governments typically fail to ensure satisfactory funding of public agricultural agencies; (c) public agencies are unable to attract and retain staff with the technical skills necessary to respond to increasingly complex farmers' needs; and (d) in spite of continued efforts, there is a persistent difficulty between agricultural research and extension, and strong linkages must be ensured (World Bank 1998b).

In response to these lessons, Bank staff and their Ivorian partners designed a follow-on project: PNASAs II. Project preparation was fully participatory, with a team led by an interministerial task force composed of representatives from MINAGRA, MESRS, ANADER, IDEFOR, IDESSA, and a wide range of producer organizations. The overall objective for the 11-year project is stated as follows:

The Program will improve the relevance and cost-effectiveness of the national agricultural extension and research system, and ensure its financial sustainability through institutional reforms aimed at transferring decision-making on strategic and management issues, and an increasing share of the financing of this system, to beneficiaries (farmers, farmer's associations, and other agricultural/agro-industrial investors). (World Bank 1998b)

This eleven-year project is organized in three phases with objectives as follows:

**Phase I (1998-2001)** - firmly establish responsive, cost-effective and autonomous agencies for agricultural research and extension services, largely owned and managed as private sector entities by their beneficiaries.

**Phase II (2002-2006)** - consolidate the achievements of the first phase to: strengthen the technical relevance and cost effectiveness of the services provided by the extension and research agencies; and in doing so, create an environment in which the beneficiaries are willing to assume an increasing share of the cost of the services they receive.

**Phase III (2007-2010)** - ensure the long-term sustainability of the system by completing the transfer of financial sustainability for all investment and operating costs to the shareholders/clients of the research and extension institutions.

The bulk of the project's funding is designed to support the privatization of both extension services and agricultural research, that being ANADER (58% of the total cost) and CNRA (30% of the total cost). The remainder of the funds will continue activities related to MINAGRA's decentralization program and support agricultural information sharing over a rural radio network.

### **3. CNRA: Integration and Transition**

**“CNRA is a private research institute with a mandate for public research.”**

*Ministry Official*

**“The bold decision of the Government of Côte d’Ivoire to allow farmers a majority stake in the country’s agricultural services agencies represents a drastic shift in the vision of the management of the sector, based on a true partnership between the State and agricultural producers.”**

*World Bank Team Leader for PNASA II*

PNASA II provided the starting point (and financial resources) for the creation of CNRA, the first semi-private, autonomous institution for agricultural research in West and Central Africa. It is at the core of an integrated system that features structural and contractual linkages with extension (ANADER). Extensive collaboration with CORAF and the international agricultural research centers is planned, based on the principles of economies of scale and comparative advantage. Per its status as a semi-private institution, the performance of CNRA staff is based on results, and private sector standards for financial accountability will be in force. Although CNRA appears to have benefited from sound planning, launching the new organization has been challenging.

#### **3.1. Technical Mandate and Agricultural Activities of CNRA**

CNRA is in charge of all types of agricultural and agro-industrial research in Côte d’Ivoire for perennial crops (coffee, cocoa, oil palm, rubber tree, etc.), annual crops (rice, maize, roots and tubers, sugar cane, etc.), animal production (livestock and fisheries), and forestry research. Research includes in-field production systems and post-harvest research (such as food conservation and processing). CNRA consists of 13 research stations spread across the country’s agro-ecological zones of the country (see Annex 1 for a map of the research stations and Annex 2 ongoing research by station). Five research stations are highly focused on experimentation and research while the other eight conduct adaptive research in different climatic and soil conditions. CNRA owns about 22,000 hectares of land, of which approximately 12,000 are in use for experimentation or production. The rest is forests or idle farmland.

In regards to the productive activities on its research stations and within the negotiations for the PNASA II, CNRA and the GOCI were required to give assurances to the World Bank that a clear separation between research activities and production/marketing activities would be maintained. This would include the maintenance of two separate records and accounts. CNRA (and its predecessor institutes) has garnered significant funds from production (or commercialization) activities.

As noted, CNRA is involved in research on regional agricultural issues as part of its mandate. Among such formal agreements are those with the Government of Gabon to rehabilitate their palm oil plantations and train their personnel, the International Center for Insect Physiology and Ecology in Kenya, and the *Centre Régional de Recherche sur les Bananiers et Plantains (CRBP)* in Cameroon.

### 3.2. Creating a Private Agricultural Research Institute

CNRA was established by decree as a semi-autonomous private company with minority public shareholding. The shareholding profile of CNRA's initial capital of FCFA 500 millions (approximately US\$ 852,000) and included contributions from the GOCI, the World Bank, and the private sector. As part of the acceptance of Bank funding, it was agreed that CNRA will be capitalized through public (40% of total) and private investments (the remaining 60%). "Public interests" include both government financing and those funds generated by CNRA itself. "Private interests" include: the Agricultural Professional Organizations (*Opérateurs Professionnels Agricoles*, or OPAs<sup>6</sup>), which would control 31% of all CNRA shares; agrô-industries with a 20% share; and the scientific community (3%), extension services (3%) and the financial sector (3%) with each a minor share. This shareholding is a goodwill representation of each stakeholder's interests in the organization, and serves as a description of intended ongoing funding. The shareholding structure, as described by those interviewed, does not permit cashing in or selling shares by shareholders at any time, and any profits generated by CNRA are to be reinvested in the organization.

The large role assigned to farmers, OPAs and agribusiness is intended to guarantee that their interests will be incorporated into the orientation, management and priority-setting of research activities – essentially a continuation of their role in the planning process that created CNRA. At the same time, the government will continue to ensure that sufficient attention is paid to food crops and is not eclipsed by the richer export commodities (cotton, coffee and cocoa, and others that dominated the agricultural research horizon in the past). Although ostensibly a private company, CNRA still falls under the supervision of the MESRS, from which it derives the public share of its funding. This dualism is intended to make CNRA operate as a private research institute, but with a still significant mandate to undertake public research.

### 3.3. Getting the Staffing Right

At the time of CNRA's creation, an essential part of the restructuring included ensuring that the staffing level was appropriate and staff quality was adequate to the job. An evaluation of performance of individual staff was carried out, which included not only technical and administrative screening, but also evaluation of entrepreneurial skills and inclinations. Based on the newly developed staffing pattern and evaluation of personnel, some staff members were reassigned to other branches of the government or took early retirement. Of those invited to remain with the new organization, not all decided to opt for the CNRA with its new structure based on private sector "riskiness" and rigor. From the staff of the three institutions of 3,600, the target was for a new CNRA staff of approximately 2,500. As of 1999, approximately 2,380 people worked for the CNRA, of whom approximately 175 have higher degrees (including both researchers and senior management). The others consist of field laborers (approximately 2000), and the rest are lower-to-mid-level staff, field managers, and laboratory assistants.

The new CNRA staff were provided significant incentives and rewards for the rigor newly demanded of them. According to one interviewee, researcher salaries are as much as twice to 2.5 times higher than the salaries paid previously (other staff also have increased salary levels, although not to this

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<sup>6</sup> OPAs include: agricultural producers and their professional organizations, agribusiness, trade associations, and other private sector interests.

extent). In addition, structural incentives based on revenue (or some kind of profit)- sharing of any contract they bring in, on top of their salary were introduced. There are also various proposals to put into place both financial and non-financial awards that would recognize excellence in research and excellence in developing new contracts. In exchange, staff members are required to perform regular working hours and keep timesheets. In addition, a blind eye is no longer turned towards individual consultancies and contracts; all such activities must be funneled through the CNRA main headquarters.<sup>7</sup> To support these new practices, more rigorous audit and financial systems have been introduced than previously were in place, at some additional cost.

At the time of this consultancy in August 2000, there were a palpable air of excitement and rejuvenation at CNRA headquarters despite current financial difficulties (see Section 4). Staff retained from the former organizations appeared to be dynamic and interested in CNRA's ability to meet its challenges. New and old staff alike were excited about their programs and the new possibilities under CNRA. New positions had been created to support the transformation into a private organization, including new financial and budget staff, one involving intellectual property issues, and several that involve contracts and sale of research results and by-products. No doubt more could be done to rationalize and motivate staff (some of which is also dependent upon their projected funding structure actually being instituted), but outside observers in the government, donor organizations, and client organizations felt that CNRA staff were more professional and motivated than in the past. There was also a sense that staff are more willing to listen to the research needs of the OPAs, a strong requirement of any organization that is going to be funded by voluntary contributions of its clientele, and will be competing with others for its resources. However, the regular interchange between clients and researchers is not as yet fully realized.

### **3.4. Getting the Funding Right: Creating the National Agricultural Development Fund**

A high priority for the PNASA II was the design of a *Fonds National de Développement Agricole* or National Agricultural Development Fund (FNDA). The FNDA was set up to be an autonomous and sustainable financing system for the two main components of agricultural development, i.e., agricultural advisory services (extension) by ANADER and agricultural research activities by CNRA. The FNDA was designed to provide the financial resources necessary to:

- Carry out applied and adaptive agricultural research,
- Provide extension services to producers and agribusiness operators, and
- Strengthen the professional capacities of the OPAs and help train producers.<sup>8</sup>

As of the writing of this document, after an initial study mission and two years of consultations with the various stakeholders, the FNDA had yet to be made operational.<sup>9</sup> The proposed initial decree

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<sup>7</sup> The study team did not have an opportunity to speak with individual research stations or individual researchers, so could not get a sense of how strictly this internal policy is held to. However, the senior administrative personnel believed that it is being respected, and are working extremely diligently to make the policy a norm in CNRA.

<sup>8</sup> The inclusion of this third component is still being debated between ANOPACI and Government authorities.

outlining the framework for this OPA-based funding mechanism was signed by the three concerned ministers (Finance, Agriculture, and Scientific Research) in October 2000. The President of the last military government did not sign it into law and action by the newly elected Head of State will most probably take some time.

### 3.4.1. Financing the FNDA

Assuming that momentum for the FNDA is regained, funds are intended to come from voluntary professional contributions levied on commercial activities and agricultural products (mostly on exported commodities). OPA contributions will be complemented by grants from the Ivoirian government and development partners. The *Association Nationale des Organisations Professionnelles Agricoles de Côte d'Ivoire* (ANOPACI) has discussed with the government the need to contain the overall tax burden on agricultural producers so that their production remains competitive within the West Africa Economic and Monetary Union (UEMOA). At this stage, therefore, no new taxes on the agricultural sector are anticipated. Instead, the following taxes already levied by GOCI on exported commodities (coffee and cocoa) are to be channeled into the FNDA:

- Sale of gross agricultural products by producers, either individually, or collectively within their professional associations; and
- The agricultural products supplied to the agribusiness sector by their own production units for internal processing.

Taxes will be collected at their "points of passage," i.e. locations where they are controlled, such as the customs offices at borders, at the airport and at ports, at the slaughterhouses monitored by government agents, and at other key locations depending on various products. Some products will not be as easily taxable as others, and the less organized commodities and products may be minimally taxed, unless they happen to be exported. The presumed method of collecting the contribution will be to agree upon CFA/kilogram amounts for each major product (e.g. 5 CFA/kg of palm oil). Although preliminary discussions around these amounts have occurred, no actual final agreements were reached by August 2000, and presumably this will be a first important step once the actual *ordonnance* and relevant *decret* have been signed

The future funding strategy through the FNDA is for an initial government contribution of 40 percent for ANADER and CNRA. The annual government contribution to their budgets will be progressively reduced to a minimum of 20 percent for CNRA and 25 percent for ANADER. OPAs and other partners are supposed to increase their contribution to the capital and their share in the operation and investment costs over time to fill in the gap created by reduced government subsidies. In the medium term (3 to 5 years), the contributions received from OPAs are planned to be extended progressively to products usually not subjected to the DUS (*droits uniques de sortie*, or Single Exit Tax). These include the animal health tax, the "Maintenance and Extension Tax" (paid by the organized sub sectors such as oil palm, rubber tree and cotton), and levies on agribusiness and food imports. In the long term (year six onwards), a more detailed study is proposed to determine which commodity or agricultural crops will be included in the tax base (an example of such a proposed funding scenario is provided in Annex 3). The resources mobilized by FNDA will be allocated to ANADER and CNRA

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<sup>9</sup> The mission included representatives from CNRA, the Ministry of Economy and Finance, and three private sector agricultural associations. The mission visited three countries (France, Belgium, and Morocco) where agricultural research operates under different models.

on the basis of annual and multi-year programs and projects to be approved first by their own boards and afterwards by the fund's management committee (see below), which will meet at least every quarter.

FNDA stakeholders seem to prefer a system of formal taxes rather than more informal voluntary contributions, because government services (e.g. Customs and Treasury staff) are better placed to verify that exporters and importers have complied with FNDA-related regulations. The contributors will be asked to issue the required checks in the name of the FNDA so that it will not be possible for the Customs or Treasury Office to cash them and divert the resources to cover other government expenses. A similar system is already operational in Côte d'Ivoire with the *Fonds de Développement de la Formation Professionnelle* or National Fund for Professional Training (FDFP).

There is debate on how the fund will be managed, and whether fund resources should be allocated on a regional basis. Although it is agreed that CNRA will manage the FNDA out of its headquarters, donors (the World Bank and the European Union) are interested in seeing the fund "regionalized." This means that each of the five regions in Côte d'Ivoire would have some amount of funding to be independently programmed for regional priorities. This seems to be attractive in terms of ensuring that the poorer regions of the country have adequate attention paid to their concerns. Research would have to be coordinated to avoid duplication of effort. From the donors' point of view, regionalization of the fund would enable them to target their funding to regions of their choice. Although the operational details have yet to be worked out, it would seem that regionalization could be largely priority-setting and programmatic in nature, not that funds would actually be managed and disbursed at offices physically located in each region. However, this is still under discussion and no agreement on the larger or more detailed aspects of establishing regional funds has been reached.

#### **3.4.2. Overseeing the FNDA**

A 24-member *Comité National de Développement Agricole* (CNDA or National Agriculture Development Committee) will govern FNDA and include the major stakeholders (see Table 1). Embodying the principle of involving stakeholders in the management of agricultural research (i.e., governance, priority setting, funding, implementation of research, monitoring and evaluation, etc), the CNDA will seek the views of research and technology users on agricultural development policies and priorities. It will also select extension and research programs to be financed by the FNDA. The FNDA will be co-managed on a tripartite basis by the government (concerned ministries), the OPAs, and research and extension service providers (CNRA and ANADER). In addition to the 24 members listed in Table 1, the Executive Secretary of FNDA will participate in the committee, and additional representation may include the general managers of CNRA and ANADER.

**Table 1: Representation on the CNDA**

| Sector                     | Representative Organization                          | Number of Members |
|----------------------------|--|-------------------|
| Government                 | Ministry of Agriculture                              | 1                 |
|                            | Ministry of Economy and Finance                      | 1                 |
|                            | Ministry of Higher Education and Scientific Research | 1                 |
| Production                 | Coffee, cocoa, and other stimulant plants            | 3                 |
|                            | Cotton and other textiles                            | 2                 |
|                            | Oil palm and coconut                                 | 1                 |
|                            | Rubber   | 1                 |
|                            | Fruits and flowers                                   | 2                 |
|                            | Sugar Cane   | 1                 |
|                            | Vegetables   | 1                 |
|                            | Forestry products                                    | 1                 |
|                            | Livestock  | 1                 |
|                            | Poultry  | 1                 |
|                            | Swine  | 1                 |
|                            | Fisheries and Aquaculture                            | 1                 |
| Professional Organizations | Chairman – National Chamber of Agriculture           | 1                 |
|                            | President of ANOPACI                                 | 1                 |
|                            | Agribusiness   | 2                 |
|                            | Agricultural Financial Sector                        | 1                 |
| <b>Total Members</b>       |  | <b>24</b>         |

One of the major objectives in reorganizing agricultural research into a semi-privatized CNRA was to involve Côte d'Ivoire's private sector both in determining and financing the research agenda. Early discussions between the government and representatives of various subsectors started off taking a sector by sector approach to setting contributions to the FNDA, and avoided discussion of how the appropriations would be managed and accorded. However, representatives of the private sector banded together and demanded to be included in discussions as a group, not individually by crop subsector.<sup>10</sup> ANOPACI played a large role in coalescing these various groups around this subject. They quickly noted that if they were to be taxed (even if it is called a "voluntary" contribution), they wanted a role in determining the level, method and management of such collections. Some subsectors were clearly quite ready to contribute, but with the proviso that they have some reduced tax obligations in other areas and more particularly, that the FNDA be controlled and operated by the private sector itself.

The negotiations around this point continued over a number of months. Finally, in late 1999 it appeared that the law structuring the FNDA was agreed to in its main principles, including that the

<sup>10</sup> As one story goes, when the Ministry understood that the private sector was indignant that they had not been included in discussions, they issued a summons to the private sector to attend a meeting. Thereupon, the private sector representatives refused to come until they were "invited." Their point was that in the new era of liberalization, the GOCI needed to appreciate the meaning of public-private *partnership*.

government would provide the collection services through its customs offices and other tax collection agencies, but that the fund would not be put into the national treasury. Instead, it would be established as a separate account with full control given to a *Conseil d'Administration*, with a majority representation by the private sector. All appeared ready to proceed, but the process was interrupted by the December 1999 *coup d'état*, and negotiations had to start over more or less from the beginning, because of the new government actors in place.

Some elements were already being implemented, despite the political unrest. Meetings between the CNRA, ANADER, the OPAs, and the relevant ministries began to occur in the field and in Abidjan to identify the priority research needs of the agricultural professionals, and to begin the process of participatory decision-making around modes of interaction and decision-making. Funding is only part of the governance and administration issue, although clearly a major part.

Efforts to get the FNDA mechanism back on track continued, and some of the earlier issues were resurrected for new discussion. The make-up of the *Conseil d'Administration* was debated. The GOCI wanted to split the representatives of the *Conseil* 50-50 between Government and OPAs. However, the OPAs considered that since their money will be used to support CNRA, they should have majority role in the *Conseil*. At least one key observer thought that the government will have one-third representation, with the OPAs having two-thirds representation. As of the writing of this document, the chairmanship of this *Conseil* still seems to be in question, as the GOCI representatives interviewed seemed to think it will be chaired by someone within the Ministry of Higher Education and Scientific Research, and the OPAs appear to think it will be chaired by the head of ANOPACI.

The discussion also reviewed how to allocate FNDA funds to CNRA. After some debate, the various groups agreed to allocate funds by research program rather than in an unspecified block to CNRA institutes. Thus, CNRA and its constituents are obliged to build and agree upon research programs together, and present each program to the FNDA to receive funding approval. The OPAs felt that this approach could provide the necessary accountability and transparency, and lend itself to rigorous comparisons of results. It is also intended to attract OPA interest as they will contribute to determining research programs.

Finally, the groups discussed what activities and organizations the FNDA would support. CNRA and ANADER were agreed upon with no difficulty, but the OPAs wanted to include a third category they entitled *appui aux organisations des producteurs*, and the GOCI wanted to include a fourth category for training and education. Apparently the description of this latter category led the OPAs to believe that this included financing the university structures, sending people abroad for higher education, and other training that might be needed at the technical school level, and they refused. They believed that this financing should be available only to activities that directly benefit the agricultural operators themselves, that is:

- 1) Applied research to be conducted by CNRA (not fundamental research such as they feel is conducted by the university),
- 2) Direct technical advisory services provided by ANADER, and
- 3) Support to producers groups, cooperatives and other direct stakeholders for specific projects or programs.

As of the writing of this document, it is unclear which components will be retained in the *ordonnance*. The *ordonnance* was signed in September 2000 by the three concerned ministries and

must be approved at the President's level. Approval by the Minister of Economy and Finance appeared to be the stumbling block for a considerable period, since it continued to want the funds to go into the general treasury, and not be separated out. Pressure by the OPAs and donors appears to have gotten this moving again, although in the current climate the achievement of the final approval step could continue to hold up the action.

## 4. Financial Resources

The recent funding of agricultural research in Côte d'Ivoire provides an initial understanding of the financial transition presently being attempted by CNRA, and offers some insight on questions of sustainable financial mechanisms appropriate for the newly privatized organization, now and into the near future. One can view the funding stream as comprising three distinct periods: before, during and after the restructuring of CNRA. It is also important to distinguish between intended and actual funding levels.

### 4.1. Past Funding for Agricultural Research

Roseboom and Pardey (1994) note that the principal sources of funding to agricultural research in the 1980s and early 1990s were government contributions, sales of products and services, contract research, and donor support. Contract research (or *conventions*) were primarily through various agricultural parastatal bodies. This contract research, plus the sale of products and services, was significant for selected IDEFOR stations during the 1986-1990 period, as shown in Table 2. IDEFOR's *Institute de Recherches sur les Huiles de Palme et Oléagineux* (IRHO) generated more than 80 percent of its budget from internally-generated funding sources. Stations with research agendas that included research on rubber (Institut de recherche du caoutchouc or IRCA), fruit (Institut de recherche des fruits et légumes or IRFA), and cocoa and coffee (Institut de recherche du café et cacao or IRCC) profited both from internally-generated funds and their relationships with donor funders. IDESSA and IDEFOR (formerly Centre Technique Forestier Tropical or CTFT) were supported by the GOCI with still a good-sized donor-funding portfolio, and CIRT was funded mainly through government sources.

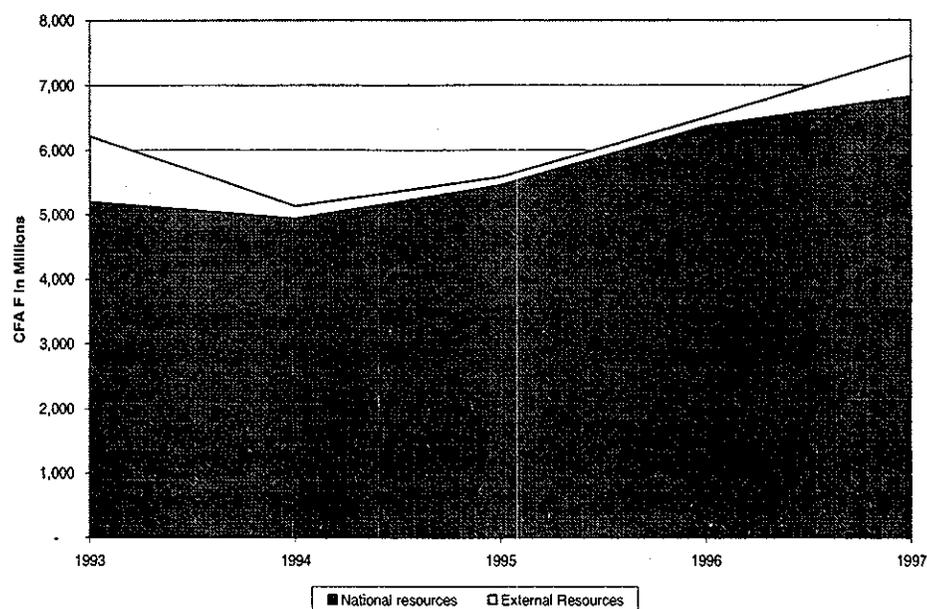
**Table 2: Source of Funding, 1986-1990 (percentage of total funding)**

|  | IDESSA | IDEFOR |      |      |      |      | CIRT |
|--|--------|--------|------|------|------|------|------|
|  |        | IRCA   | CTFT | IRFA | IRCC | IRHO |      |
| GOCI   | 64.2   | 23.4   | 51.7 | 37.3 | 31.6 | 11.3 | 97.0 |
| Internally Generated Revenues<br>(Sales & Contracts) | 6.0    | 36.0   | 5.1  | 39.7 | 25.2 | 80.4 | --   |
| Donors   | 29.9   | 40.6   | 41.4 | 23.0 | 43.2 | 8.3  | 3.0  |
| Total  | 100    | 100    | 100  | 100  | 100  | 100  | 100  |

Source: Roseboom and Pardey (1994)

During the period 1993-1997, directly before the creation of the CNRA, annual funding averaged about 6.2 billion FCFA a year (US\$ 13.6 million when adjusted by the annual exchange rates). The system was funded primarily from a combination of government contributions and resources generated internally by sales and contracts (see Figure 1). Total external resource support was never more than 20 percent over the 1993-1997 period.

**Figure 1: Funds for Agricultural Research in Côte d'Ivoire 1993-1997**



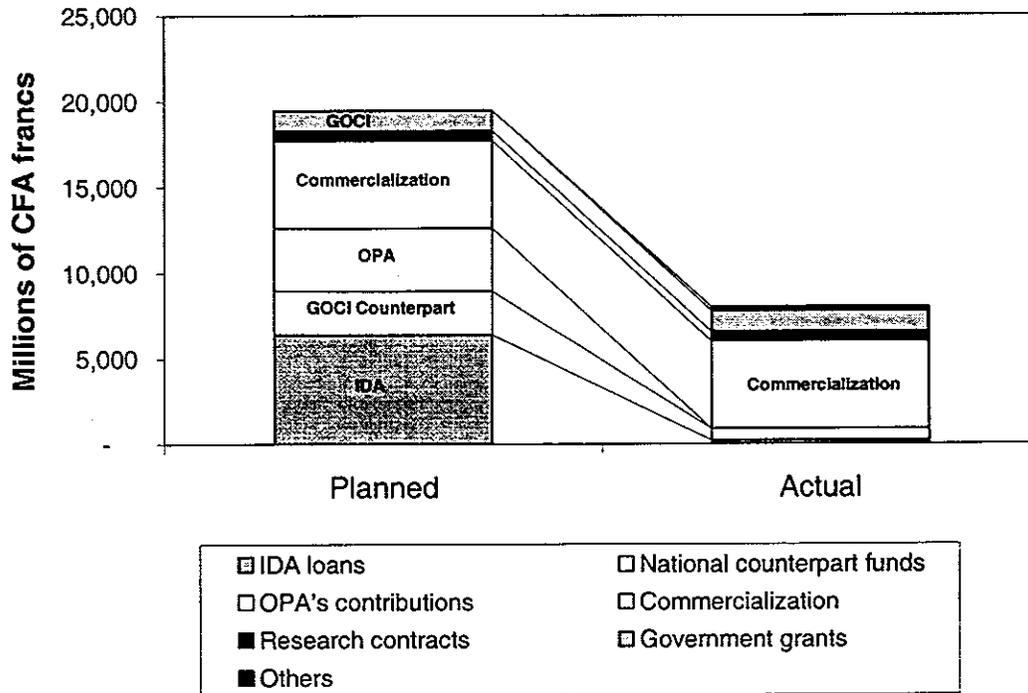
## 4.2. Transition funding for CNRA

During the 1999-2001 PNASA Phase I transitional period (i.e., prior to the FNDA becoming operational), financing for the CNRA annual budget was intended to be as follows:

- Forty-two percent from the World Bank (IDA loan under the PNASA II project);
- Thirty-five percent from resources generated by the CNRA through research contracts, commercialization of agricultural products, and research results; and
- Twenty-three percent from the GOCI in the form of subsidies.

In reality, transition funding has fallen far short of targets, as Figure 2 and Table 3 illustrate. In 1999, only FCFA 8,031 million of the programmed FCFA 19,494 million were received (42% of the planned resources, equivalent to US\$13.1 million of the programmed \$US 31.7 million). The largest shortfall was the contribution of the World Bank's IDA loan, which was linked to GOCI contributions. The GOCI disbursed only FCFA 700 million, or 27.5 percent of the programmed national counterpart funds. As a result, the World Bank disbursed only 3.4 percent of the intended IDA funds, totaling only FCFA 219 million (\$USD 360,000). None of the anticipated FCFA 3,687 million (\$US 6.0 million) of OPA funds expected from farmer's organizations materialized due to delays in setting up the FNDA.

**Figure 2: CNRA 1999 Funding: Planned versus Actual**



Given these devastating shortfalls, the CNRA was only able to operate thanks to an exceptional level of internally generated revenues. Roughly 71 percent of all resources mobilized by CNRA came from sale of products/commercialization and research contracts against a plan of 35 percent. Over FCFA 5,120 million (US\$ 8.3 million) was internally generated through commercialization and another FCFA 567 million (US\$ 2.3 million) through research contracts.

**Table 3: Planned versus Actual CNRA Funding in 1999**

| Sources of funds                 | Planned           | Actual           | Difference         |
|----------------------------------|-------------------|------------------|--------------------|
|                                  | In FCFA 000       |                  |                    |
| <b>PNASA II</b>                  |                   |                  |                    |
| IDA loans                        | 6 400 000         | 219 169          | -6 180 831         |
| National counterpart funds       | 2 550 000         | 700 000          | -1 850 000         |
| OPA's contributions              | 3 687 000         |                  | -3 687 000         |
| <b>Sub total</b>                 | <b>12 637 000</b> | <b>919 169</b>   | <b>-11 717 831</b> |
| <b>Commercialization</b>         | 5 073 500         | 5 120 138        | 46 638             |
| <b>Others</b>                    |                   |                  |                    |
| Research contracts               | 584 655           | 566 724          | -17 931            |
| Government grants                | 1 198 808         | 1 198 808        |                    |
| Others                           |                   | 225 968          | 225 868            |
| <b>Sub total</b>                 | <b>1 783 463</b>  | <b>1 991 500</b> | <b>207 937</b>     |
| <b>Total mobilized resources</b> | <b>19 493 963</b> | <b>8 030 807</b> | <b>-11 463 256</b> |

Source: CNRA

### 4.3. Continued Financing of CNRA – Recent Developments

No data for fiscal year 2000 were available for this study. However, recent evidence indicates that the situation for continued CNRA funding from both the World Bank and through government sources is bleak. As noted, in March 2001 the World Bank placed all Côte d'Ivoire loans and IDA credits in non-accrual status.<sup>11</sup> It is presently unclear what the direct effect is on the PNASA II, but non-accrual status means that all overdue payments must be made before the Bank can extend any new loans/credits or resume disbursements on already approved loans/credits. In July 2001, CNRA employees declared a 72-hour work stoppage.<sup>12</sup> Their grievance stemmed from non-payment of salaries for the months of May and June, and other allowances owed to them from 1999 and 2000. The status of the strike and/or resolution of the issues are unknown as of this writing.

Table 4 summarizes the current funding situation for CNRA. Because of the delayed implementation of the proposed agricultural development fund (discussed below) and GOCI financial questions, the funding situation for CNRA is problematic at best.

<sup>11</sup> World Bank News Release No. 2001/251/AFR

<sup>12</sup> See <http://www.fratmat.co.ci/story.asp?ID=6411>

**Table 4: Shareholding, Financial Instruments, and Funding Status for CNRA**

| Shareholders             | Percent Share | Financial Instruments  | Support for CNRA to date  |
|--------------------------|---------------|--|---|
| <b>Public Interests</b>  | <b>40%</b>    |  |   |
| Government               | 20%           | <ul style="list-style-type: none"> <li>Ministry of Higher Education and Scientific Research budget</li> <li>Bilateral and Multilateral Donors</li> </ul>   | <p>GOCI provided 27.5% of the counterpart funds in 1999. WB provided 3.4% of IDA funds in 1999.</p> <p>Assorted bilateral and multilateral research agreements (i.e., CIRAD, CORAF), but extent unknown</p> |
| Internally Generated     | 20%           | <ul style="list-style-type: none"> <li>Staff consultancy contracts</li> <li>Sale/licensing of research products and results, and</li> <li>Sale of research by-products</li> </ul>  | Provided 71% of operating expenses in 1999.   |
| <b>Private Interests</b> | <b>60%</b>    |  |   |
| OPAs                     | 31%           | <ul style="list-style-type: none"> <li>“Voluntary levy” channeled through the National Agricultural Development Fund</li> <li>Research contracts with the private sector, other governments, and other research organizations</li> </ul> | No funding to date through FNDA from any of these sources   |
| Agro-Industries          | 20%           |  |   |
| Scientific Community     | 3%            |  |   |
| Extension Services       | 3%            |  |   |
| Financial Sector         | 3%            |  |   |

The lack of government funding and the delay in establishment of the FNDA have forced the CNRA to survive almost solely off of its research contracts and products for the past several years. Fortunately, CNRA’s expenses decreased during the period of restructuring (from reduction of personnel, etc). However, the degradation of its stations and equipment cannot continue. Even its current practice of selling research byproducts is declining due to its inability to afford fertilizers and pesticides, so that production is steadily decreasing each year.

The World Bank’s contribution to the CNRA program was planned as matching funds with the government to cover purchase of such items as new equipment, computers, etc. However, the GOCI has been able to supply very little in the way of actual funding. Some counterpart contribution in the form of waived tariffs and taxes has been recognized by the World Bank and funds made available accordingly. In addition, the World Bank has allowed the CNRA to use some of its own resources from contracts and agreements with other organizations to be considered as counterpart funds, and has therefore made some additional planned funding available for capital investment (not operating costs). The World Bank is also flexible in allowing planned funding from past years to roll over, if unused, into future years in the hopes that GOCI funding will pick up in time, and OPA funding will be operational shortly. Given the non-accrual status, however, options between the WB and GOCI may be limited.

## 5. CNRA Policy Directions and Constraints

In addition to needing appropriate mechanisms for resource mobilization and allocation, NARS require well-functioning institutional and organizational structures plus a supportive policy and administrative environment (Bingen and Brinkerhoff 2000). The previous sections have outlined the historical and national context for CNRA, the establishment of the Center and its key financial mechanism, and some of the financial constraints. This section surfaces a number of policy issues related to the operation and effectiveness of CNRA in both the immediate term and into the future.

### 5.1. Agricultural Research: Public versus Private Goods

A difficult policy issue for CNRA has been the privatization of operations and the transition from three formerly public sector research entities. Much of the difficulty is embedded in the mandate of the World Bank-funded project. On one hand, CNRA has been privatized, but on the other its mandate retains a number of "public good" elements, such as gender issues, environmental concerns, and poverty reduction that could/should be considered part of the government's responsibility.

During interviews for this study, this tension was noted by both GOCI and CNRA informants. Although CNRA is set on the path to privatization, there remains an expectation that at least part of its research and results will remain driven by the public interest and will be publicly available. Virtually all public entities interviewed (i.e., MINAGRA, MESRS, and the Ministry of Finance and Economy) said that research on basic food crops should continue. CNRA staff stated that "research for the public good" remains an integral part of how they define their mandate.

Two issues emerge from CNRA's mandate for public good research. The first is, who pays for it? Clearly, there is a strong case for government to support the cost of research that falls into this category. The second is, who captures the value from this research and associated technologies? In the past, the government has had an open-door policy relative to access to publicly-funded research and results. At the same time, there is a common (yet contradictory) belief that research on commercial crops must not be automatically in the public domain, but should somehow be made available only to the subsector actors in Côte d'Ivoire. For CNRA, a significant share of research is currently funded by the dominant commercial crops producer groups, businesses, and associations, such as oil palm, cacao, coffee, and *hevea* (rubber). Research contracts with private companies (and other governments and research institutes in the sub-region) further encourage research on export and commercial crops.

Thus CNRA has a varied set of research funders, and as discussed above, at present the GOCI is providing very little funding (see Section 4). These funders are interested in retaining the benefits of the research they have funded. Further, CNRA sees that commercial crop research offers financial opportunities to the Center. For example, new varieties of nursery plants and seeds that can be sold by CNRA stations, or research byproducts harvested from experimental plots that can be marketed.

Under CNRA's newly privatized structure, researchers and managers have become very much aware of the monetary value of their research results and the need to protect them and use them as sources of funding. However, the GOCI is reluctant to allow CNRA to function as a true private-sector organization by marketing its research results and protecting them under license or patents. The

challenge CNRA faces is to balance its continuing public sector research mandate with its private-sector status.

A major issue is the latitude to raise funds through commercializing its research products. At present, the CNRA is only allowed to sell research products and results to the private sector entities that specifically contracted for them. It has not received official approval to commercialize other products. Allowing CNRA, for example, to license its newly discovered seed varieties to the private sector would both raise funds and take care of multiplication and distribution of the seeds to the public. This kind of activity is already practiced in many countries, even with publicly funded research. It actually works in favor of the technologies or research results making their way to the clients, instead of depending on the researchers to disseminate their findings.<sup>13</sup>

Opinion is split as to where CNRA's latitude as a private sector organization with a public sector research mandate begins and ends. CNRA staff members want the right to determine, collaboratively if necessary, which research can be commercialized or sold under license. On the other hand, some individuals in the GOCI feel that all research results not bound by contracts or financed by outside entities should be in the public (including international) domain; that is, made publicly available free of charge. Further discussions and agreement on where to draw the line will need to continue and become more specific, especially once the FNDA is operational. In many countries, including the United States, it is common practice for research institutions to obtain value from research results, whether public funds are supporting the research or not.

It appears that all parties, including CNRA and even the private sector, still expect that the Center will perform at least some research for the benefit of those "poor subsectors" that are unable to finance research on their crops either directly through actual research contracts, or through contributions to the FNDA. All seem to agree that research for the public good (such as low value but essential food crops) should remain a part of CNRA's responsibility. The challenge is to put into place an operational structure that allows CNRA to fulfill this mandate without negatively affecting its financial viability.

## **5.2. Policies Affecting Research and Technology Transfer**

There are a selected number of scientific and national policies that will become increasingly important to CNRA in the near future. Some of these, such as intellectual property rights and value added tax structures, support CNRA's efforts to privatize and provide resources sufficient to support research in the future. Other policies, such as land tenure, affect the ability of end-users to utilize research results and improved technologies and ultimately their willingness to support further research.

### **5.2.1. Intellectual Property Rights**

During the CNRA reorganization, several new positions were added to fulfill new functions necessary in a private organization. One such position was that of Advisor on Intellectual Property Protection.

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<sup>13</sup> This would only be practicable where the research finding is something tangible such as a new seed variety or some other technology, not a change in cropping actions such as distance between plants, intercropping, etc, which would need to continue to depend on various forms of extension activities to be disseminated to the producers.

The advisor's functions include establishing security of intellectual property rights, ensuring the inclusion of specific clauses in contracts covering patent and property rights, and educating CNRA staff on the importance of maintaining security around various research results and products. The advisor has developed a draft proposal for protecting the intellectual property of the CNRA, which was under CNRA review at the time of this study (elements of the proposals are found in Annex 4). The proposal includes possibilities for ensuring recognition and publicity for CNRA research results, as well as placing value on them. These alternatives include such activities as packaging products with various brand names and trademarks, developing patents, licensing products, and so on.

The protection of intellectual property rights in agriculture is complex, and is in its infancy in Côte d'Ivoire. Although there are national laws governing intellectual property rights, patents (*brevets*) that cover research results and new technologies internationally must be accepted by the International Organization for the Protection of Intellectual Property, located in Geneva, in order to be properly protected. This organization covers all intellectual property, not just within the agricultural sector. However, in order to make a patent case at the international level, an Ivoirian researcher must first present a case to the *Organisation Ivoirien pour la Protection de la Propriété Intellectuelle*. This national entity then takes the case to a regional organization, the *Organisation Africaine pour la Protection de la Propriété Intellectuelle*, who then submits the case to the International Organization for the Protection of Intellectual Property. The process is time consuming and usually expensive. First, each research organization must ratify the principles of the protection of intellectual property in its own statutes. Then Côte d'Ivoire would need to pay membership fees to the above organizations. Finally, in order to receive a specific patent, the CNRA would have to pay a fee for each country covered, and for each year of coverage to ensure its legal claim.

Protection of intellectual property rights may well be worthwhile in some cases. Anecdotes about research products and seed varieties having been pirated by cooperating scientists from other countries circulate in CNRA. In one instance having to do with a cotton variety apparently now being widely diffused in central Asia, there is evidence that a formal protest was lodged with MESRS and the Ministry of Commerce against a specific country whose exchange intern had stolen the new seed variety. As far as CNRA knows, no action on this protest was ever taken, and without patent protection or contract clauses affording some protection, there is little legal recourse. Local licensing of research results may be more practicable in most cases (and a legitimate starting point for many researchers), although this does not offer legal protection in most international situations.

### **5.2.2. Policies on Taxes and Tariffs**

An important issue for CNRA is the recent imposition of new taxes and tariffs and their effect on agriculture. The TEC is a tariff levied on imports from outside of the eight-member country common market of the *Union Economique et Monétaire Ouest Africaine* (UEMOA). The intent is to provide incentives for local industries in this common market to develop and flourish with less competition from other countries (notably Europe and Asia), and to reduce and eliminate cross-border tariffs within the region. The intent is also to reduce the overall tax burden on the economic sectors of these countries, particularly those that are the most valuable to the countries' trade and production sectors. The TEC ranges from zero to 20 percent on imported items, and a phased application was set to begin in January 2000.

However many key agricultural inputs are not produced within the UEMOA zone. For example, farmers and researchers must pay a 20 percent TEC on animal feed inputs (such as vitamins and nutrients) not fabricated within the UEMOA zone. The direct impact of the TEC for CNRA is on the increased cost of importing equipment and materials needed for maintenance and upkeep of their research stations, laboratories, and other programs. Although currently part of the counterpart contribution of the GOCI in support of CNRA to achieve World Bank counterpart investment funding, World Bank funding under PNASA II is of a limited nature and duration. Therefore, TEC application to foreign made computers, vehicles, agricultural and scientific equipment will eventually have a significant impact on CNRA's budget. At present the government is waiving these costs as part of its 40 percent contribution to PNASA II. However, that has the effect of crowding out possible GOCI contributions for operational expenses.

In addition to TEC on certain imports, the government also applies the *Taxe sur la Valeur Ajoutée* (TVA). This tax of 20 percent is applied to all services and goods. Upon export of any goods, is refundable and offset at various levels depending on other taxes and tariffs paid. Domestically consumed goods and services such as grains and cereals, vegetables, and meat/poultry products retain the tax. The skewed impact of TVA punishes poorest sectors of the agricultural economy, and further limit their ability to financially support CNRA's research efforts.

There are also additional export taxes on specific commodities such as oil palm. Representatives of some private producer and agribusiness organizations are very concerned about the mounting and ill-coordinated tax burden. They ask, if we are already paying TEC and TVA, why should we also pay into the FNDA? They have asked that other taxes be reduced or eliminated if they are to pay into the FNDA, but it is unlikely that this will occur. One individual noted that there seems to be a significant lack of holistic planning on the part of the decision-makers relative to the agricultural sector.

### **5.3. Risks for CNRA's Institutionalization**

CNRA's path toward institutionalization and sustainability has been a rocky one. There was a clear appreciation by the planners of PNASA II that amalgamating three public sector agencies into a single privatized one would be challenging. Table 5 outlines critical risks identified at the outset of the transition supported by PNASA II, rates those risks as moderate or substantial, and suggests minimization measures. In hindsight, this assessment seems to have understated the risks CNRA has faced. The most critical risk factor appears to have been the domino effect created by the reduced level of funds available, and the delays in enabling legislation caused by the recent political instability. The cumulative effect of all of these has imperiled CNRA's viability when the newly created institution is in the particularly vulnerable start-up phase.

**Table 5: Critical Risks for CNRA as part of PNASA II**

| <b>CRITICAL RISKS</b>  | <b>RATING*</b> | <b>RISK MINIMIZATION MEASURE</b>   |
|--|----------------|--|
| Research weak; proposed solutions are not responsive to farmer's needs   | M              | Farmers have a 40% representation on CNRA board, and participate in design and finance of research.                |
| Relationship between ANADER and CNRA is weak                             | M              | ANADER and CNRA are represented on each other's boards, joint participation in annual technical review committees. |
| Delay in implementing new statutes.                                      | M              | Close monitoring from Resident Mission   |
| Reluctance of staff to leave civil service                               | S              | Attractive work environment and salaries in line with national standards.  |
| Farmer's organizations unable to give a sense of direction to CNRA       | M              | Support to farmer's organizations.   |
| Reluctance of Ivorians to consider foreign researchers as equal partners | M              | Study tour support and participatory research networks.  |
| Unqualified field staff or absence of qualified staff                    | M              | Substantive training provided.   |
| Administrative delay in program implementation                           | S              | Close monitoring from the Resident Mission and dialogue with the GOCI.   |
| Government reluctance to give up the major voice in program management   | M              | Dialogue with GOCI.  |

\*M = moderate risk. S = substantial risk.

Source: World Bank (1998b).

A number of targets need to be met in order for the World Bank to release funding for the 2002 scheduled second stage of the project. These constitute benchmarks for CNRA's ongoing institutionalization, and include the following: (a) satisfactory performance of ANADER and CNRA, and operation of ANADER and CNRA as autonomous private sector entities with efficient technical linkages between them; (b) all ANADER and CNRA staff are contractual and no longer have civil service status; (c) CNRA's programs of activities are relevant to their clients, including target groups with low income; and (d) CNRA's activities concerning research and production/marketing are clearly separated in terms of management and financial arrangements. A joint government-World Bank review is scheduled to assess progress and achievements of the first phase of PNASA II.

## 6. Issues and Ongoing Questions

Since its initial establishment, CNRA has made important steps toward restructuring its personnel, reorganizing and adapting its mode of operations, working with its stakeholders, and setting up the necessary systems and mechanisms to ensure sustainable financing in the future. Despite political and economic upheaval, CNRA staff and stakeholders have made commendable progress toward launching the Center as a semi-autonomous private research and technology transfer organization. Across Africa, CNRA is being looked to as a potential model for other countries. While there are promising signs of success, caution is in order. It is too early to fully evaluate CNRA's achievements and usefulness as a model for other African countries. Ongoing questions of reorganization and decentralization, privatization, expectations and contributions of CNRA's stakeholders, and other financial issues remain unresolved. Several of the most salient issues and related questions are discussed below.

### **Issue 1. CNRA's mandate that combines public and private research introduces an inherent tension in the institution related to responsiveness to user needs and to financial sustainability.**

The reorganization of three public entities into one semi-autonomous private organization represents a serious attempt to make agricultural research responsive and demand-driven. The downsizing of staff has resulted in a more streamlined organization that has the capacity to respond to local farmers' groups, commodity associations, and regional technology users, etc. By including a wide range of agricultural stakeholders as active members of the FNDA committee, the voices of end users will figure more prominently in priority-setting and planning. By having the GOCI involved (as minority partners to represent key national agricultural policies and often forgotten poor and women farmers), the system has the potential address public goods research. However, as noted in this study, CNRA faces some trade-offs and possible conflicts in becoming demand-driven, particularly under conditions of resource scarcity.

#### Ongoing Questions:

- **Do CNRA's private sector participants understand the time constraints involved in agricultural research, and will they ultimately value that research sufficiently to provide long-term support?** The move to make private commodity groups more involved in decision-making through a levy or cess mechanism implicitly includes the ability to deny funding for CNRA. It is good public relations and marketing for the research organization, therefore, to make every attempt to ensure that its clients understand the value they are getting from the research, understand how research is conducted, and participate in determining research priorities.
- **Will all beneficiaries be integrated into the research process, or will it be dominated by export-oriented commodity groups?** Undoubtedly, there are researchers from CNRA's predecessors that have extensive links to commodity groups, and may see them as more viable financial sources than small and medium-sized producer organizations. Regardless, those receiving advice from extension services as a result of the efforts of CNRA should be involved in the decision-making process, the implementation, as well as the financing and the management of funds and committees set up for the sustainable financing of the agricultural sector development as a whole. Many farmer cooperatives are presently weak organizations, and CNRA (through targeted research), the World Bank (through support and

training efforts), and the GOCI (through policies and “good offices”) need to continue to evaluate their participation, and take steps to strengthen them if necessary.

**Issue 2. Serious institutional issues related to staff incentives and intellectual property rights persist as CNRA pursues its transition from public sector agency to private sector organization.**

The successful privatization of an agricultural research institute requires a change of behavior, attitudes and mentalities so as to develop a “private company culture” among staff members who now must (a) compete actively to attract more funds for their research activities and (b) meaningfully interact with supporting stakeholders to ensure continued contributions.

Ongoing Questions:

- **Will there be provisions for staff incentives based on performance?** Researchers who help garner resources for the institution should be rewarded with monetary and professional incentives. Salary considerations, sabbaticals in new research areas, study trips (especially those organizations that are already established as institutional partners), work recognition, and so on will help recruit and retain the “best-and-the-brightest.”
- **At what level and in what manner will the GOCI participate in CNRA’s private sector transition?** Government services, for instance, would be involved in collecting agricultural producers’ contributions through cesses and taxes, but should they be involved in other financial transactions between CNRA and its private sector supporters? Issues related to intellectual property, rights in data, and leases and patents concern not only CNRA researchers, but those at universities and other entities in the country. Government policy decisions will have an impact on CNRA’s and others’ incentives to conduct research and development. How can the GOCI structure policies to serve researchers at both the public and semi-autonomous private sector agricultural research entities? As noted in Issue No. 1 above, there are tensions and opportunity costs for CNRA researchers in responding to public sector needs when the need to generate external support pushes them to accord higher priority to responding to private sector stakeholder demands.

**Issue 3. CNRA and its stakeholders will need to periodically evaluate the principles that set up the FNDA (as it becomes operational) as well as the financial contributions of each of the Fund’s participants.** As a new organization in transition, CNRA must adopt to various external policy constraints and opportunities through flexible internal management mechanisms. The ultimate survival of a semi-autonomous private sector CNRA will be its annual mobilization of funds and the subsequent transparent use of those funds for the benefit of its key stakeholders. The FNDA, in keeping with international experience with competitive funds, has the potential to be a financial mechanism that can reinforce incentives for results-based research management and responsiveness to demand.

Ongoing Question:

- **Does the 24-member CNDA reflect the priorities of Côte d’Ivoire, or should there be different representation?** Key benchmarks could be established to help guide the selection of alternative committee members. Increased demand for certain cereal production for

national consumption, or the continued decline of the coffee and cocoa markets may influence the composition of grants given by the FNDA. The cautionary note here is that such committee member rotations should happen on a three to five year basis in order for research programs to be fully implemented.

**Issue 4. Given the funding situation to date, CNRA must consider any and all additional funding mechanisms as well as develop scenarios for lean years.** Given the history of selected research stations and the presumed connections of many CNRA researchers, there appear to be additional self-funding options for CNRA. Research linkages to CIRAD, within CORAF and WARDA, and within the larger African community (especially around methods related to cocoa and coffee production) are strong and may be exploited.

Ongoing Question:

- **With separate accounting of product/marketing activities as a condition of the PNASA II, is there an unstated policy that CNRA should be reducing its commercialization activities?** One could argue that the selling of research-generated produce, germplasm, or seeds can be construed as direct competition with the (hopefully) expanding agricultural private sector. This is a situation often found in the United States, where entrepreneurs feel that state and local research organizations are subsidized by the government and should not be allowed to sell, for instance, improved seeds to generate their own funds. However, until GOCI and FNDA funding is more secure, CNRA will be obliged to continue (and perhaps enhance) its ability to generate its own resources by any means necessary.

**Issue 5. Given the current policy and financial environment, and despite CNRA's efforts in both institutional reform and continued provision of services, performance triggers for second stage of WB funding will be difficult to attain by the end of 2001.** The economic and political environment of Côte d'Ivoire has severely delayed the effective implementation of the first phase of PNASA II. Table 3 identifying the critical risks for CNRA notes that institutional linkages between (a) ANADER and CNRA and (b) farmer's organizations and CNRA must be strengthened before further funding is released. Given the funding constraints to date, one can assume that these sets of institutional linkages may not be as strong as was imagined in the original project planning. One would also hope that the scheduled Phase I evaluation would still take place and be used instead as a mid-term evaluation to revise and specify indicators as needed.

## Bibliography

Bingen, R. James and Derick W. Brinkerhoff. 2000. *Agricultural Research in Africa and the Sustainable Financing Initiative: Review, Lessons and Proposed Next Steps*. Washington, DC: U.S. Agency for International Development, Bureau for Africa, Office of Sustainable Development. Technical Paper No. 112, August.

Consultative Group on International Agricultural Research (CGIAR). 2001. "Web Based Information System for Agricultural Research for Development (Wisard) Project Information – Côte d'Ivoire." Washington DC: Author.

<http://www.wis.cgiar.org/wisard/shared/asp/StrCountrySelect.asp?CountryA2=CI>

Glounaho, Daniel. 2000. "Etude sur la vulgarization agricole en Côte d'Ivoire." Rome: United Nations Food and Agriculture Organization, Sustainable Development Department. *SD dimensions*, June 20. <http://www.fao.org/sd/FRdirect/EXre0028.htm>

International Monetary Fund. 1998. "Côte d'Ivoire: Enhanced Structural Adjustment Facility Policy Framework Paper, 1998–2000. Prepared by the Ivoirien Authorities in cooperation with the staffs of the International Monetary Fund and the World Bank Staffs." Washington, DC: Author.

<http://www.imf.org/external/np/pfp/cote/index.htm>

International Monetary Fund. 2001. "Côte d'Ivoire – Letter of Intent and Memorandum of Economic and Financial Policies for the Staff-Monitored Program, July-December 2001." Washington, DC: Author, August 13, 2001.

<http://www.imf.org/External/NP/LOI/2001/civ/01/Index.htm>

La Lettre d'Agropolis. 1997. Lettre No. 41. Montpellier (France): Author, March. <http://www.agropolis.fr/lettre/lett41.html>

Ladipo, Rigobert Oladiran. 1990. "Nigeria and the Ivory Coast: Commercial and Export Crops Since 1960." In Hamid Aït Amara and Bernard Founou-Tchuigoua, eds. *African Agriculture: The Critical Choices*. Tokyo and London: United Nations University and Zed Books. <http://www.unu.edu/unupress/unupbooks/uu28ae/uu28ae0d.htm>

Prakash, Siddhartha. 1999. "Trade and Development Case Studies: Côte d'Ivoire (Part 4. Agriculture)." Geneva: World Trade Organization. <http://www.itd.org/issues/ivoire4.htm>

Roseboom, Johannes and Philip Pardey. 1994. *Statistical Brief on the National Agricultural Research System of Côte d'Ivoire*. The Hague: International Service for National Agricultural Research, Brief No. 16, December.

<ftp://ftp.cgiar.org/isnar/indicator/pdf/16-CoteD'Ivoir.pdf>

Traoré, Aly. 1990. "Ivory Coast: Agricultural and Industrial Development." In Hamid Aït Amara and Bernard Founou-Tchuigoua, eds. *African Agriculture: The Critical Choices*. Tokyo and London: United Nations University and Zed Books.

<http://www.unu.edu/unupress/unupbooks/uu28ae/uu28ae0d.htm>

US Department of Commerce. 1999. "Côte d'Ivoire Investment Climate Statement."  
Washington DC: Author. National Trade Data Bank. September.  
<http://www.tradeport.org/ts/countries/cotedivoire/climate.html>

World Bank. 1998a. "Changing Extension Institutions: The Côte d'Ivoire Agricultural Extension Project." Washington, DC: Author, Agricultural Knowledge and Information Systems (AKIS). January.  
<http://wbln0018.worldbank.org/essd/susint.nsf/e5abf2ca9f73c7bc852569f00067efb7/1aa457590fa349f6852569e7007fd1c3?OpenDocument>

World Bank 1998b. "Project Appraisal Document on a Proposed Adaptable Program Loan Credit to the Republic of Côte d'Ivoire." Washington, DC: Author, Report No. 18047.

World Bank 1998c. "World Bank Approves US\$50 Million for Agricultural Services in Côte d'Ivoire." News Release No. 99/1878/AFR. Washington, DC: Author.  
<http://www.worldbank.org/html/extdr/extme/1878.htm>

#### **Web Sites Noted and of Interest**

CIRAD  
<http://www.cirad.fr>

CNRA  
<http://www.cmaoc.org/fr/recher/reonat/chcoiv/cnra.htm>

CNRA Workers Threaten 72 Hour Strike  
<http://www.fratmat.co.ci/story.asp?ID=6411>

Cocoa Trade in Côte d'Ivoire (COCOA)  
<http://www.american.edu/TED/cocoa.htm>

CRO, CNRA sells research well  
<http://www.fratmat.co.ci/story.asp?ID=1218>

Deforestation in Côte d'Ivoire (IVORYWD). Case Number 318  
<http://www.american.edu/TED/ivorywd.htm>

Gabon persons visit CNRA  
<http://www.notrevoie.ci/story.asp?ID=251>

IDEFOR  
[http://www.refer.org/ivoir\\_ct/rec/cdr/idf/accueil.htm](http://www.refer.org/ivoir_ct/rec/cdr/idf/accueil.htm)

Investment Promotion Center of CI  
<http://www.cepici.go.ci/>

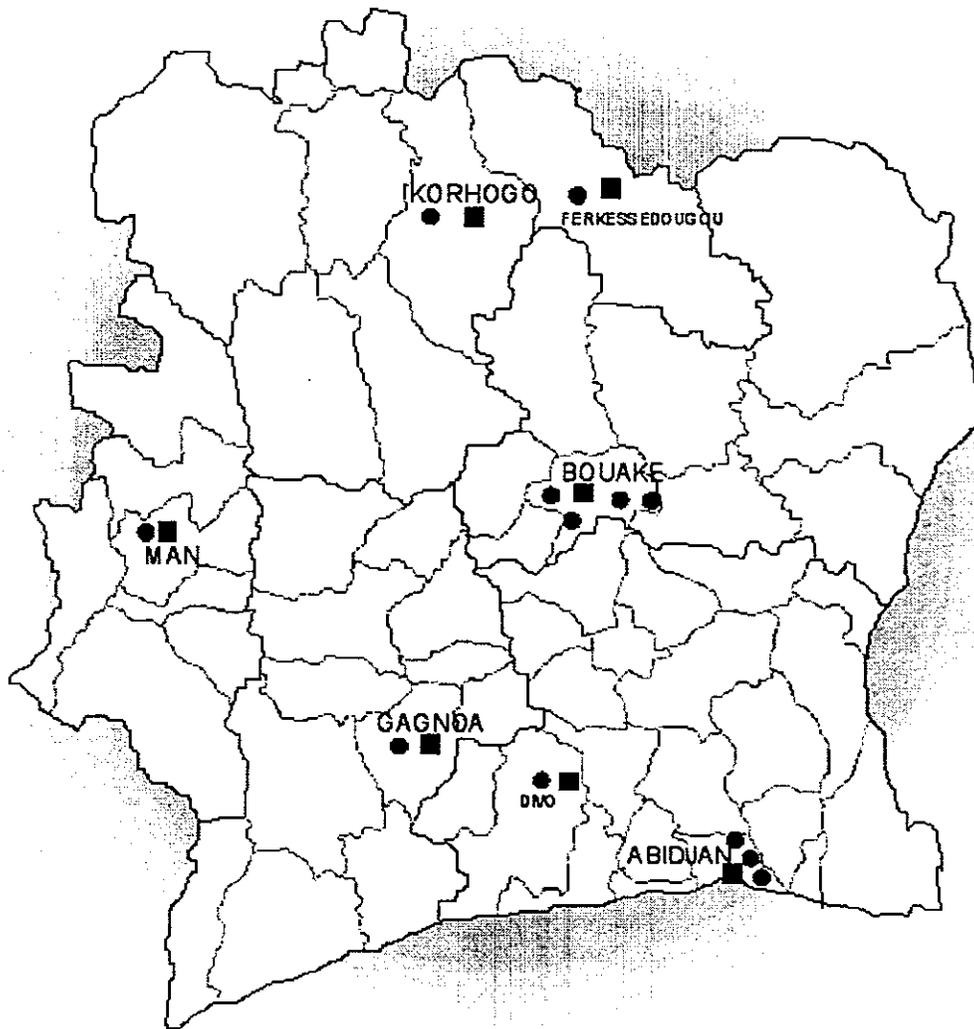
Ministry of Higher Learning and Scientific Research  
<http://www.pr.ci/gouvernement/ministeres/ens/index.html>

Ministry of Agriculture and Animal Resources  
<http://www.pr.ci/gouvernement/ministeres/agr/index.html>

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# Appendix 1: Map of Côte d'Ivoire Agricultural Research Stations



Source: <http://www.cmaoc.org/fr/recher/reonat/chcoiv/cnra.htm>

## Appendix 2: CNRA's Regional Centers and Illustrative Research Activities

| Regional Center (Location)  | Illustrative Research Activities   |
|-----------------------------|--|
| Abidjan                     | <ul style="list-style-type: none"> <li>• Adaptive research and technological innovations</li> </ul>  |
| Bouake                      | <ul style="list-style-type: none"> <li>• Rice</li> <li>• Roots and tubers</li> <li>• Fiber plants</li> <li>• Market gardens</li> <li>• Animal husbandry</li> <li>• Fodder and cover crops</li> <li>• Fish farming</li> <li>• Resource management</li> <li>• Laboratory analysis for water, soil, and plant material</li> </ul> |
| Lataha (located in Korhogo) | <ul style="list-style-type: none"> <li>• Fruit diversification</li> <li>• Corn and other cereals</li> <li>• Fiber plants</li> <li>• Sugar cane</li> <li>• Diversified plantings for erodible areas</li> <li>• Adaptive research and technological innovations</li> </ul>   |
| Man                         | <ul style="list-style-type: none"> <li>• Coconut</li> <li>• Rubber</li> <li>• Coffee and cocoa</li> <li>• Rice</li> <li>• Roots and Tubers</li> <li>• Market gardens</li> </ul>  |
| Gagnoa                      | <ul style="list-style-type: none"> <li>• Coffee and cocoa</li> <li>• Coconut</li> <li>• Rice</li> <li>• Corn and other cereals</li> <li>• Sugar cane</li> <li>• Perennial culture systems</li> </ul>   |

Source: <http://www.cmaoc.org/fr/recher/reonat/chcoiv/cnra.htm>

## Appendix 3: Cost Sharing Plans for the FNDA

When the FNDA becomes operational, the cost-sharing (burden sharing) will be between the GOCI, the Partners and the Service providers (through internally generated resources). A 5 year scenario in the following table summarizes one of the 12 scenarios presented in a 1998 study<sup>14</sup>.

**Table 6: Cost Sharing and Mobilization of Indirect Taxes for FNDA (in FCFA million)**

|   | Year 1        | Year 2        | Year 3        | Year 4        | Year 5        |
|---|---------------|---------------|---------------|---------------|---------------|
| <b>1. Hypothesis</b>  |               |               |               |               |               |
| <b>1.1 Taxes and levies for the FNDA</b>                      |               |               |               |               |               |
| Share of exported crop coffee, cocoa, cotton, oil palm (FCFA) | 4%            | 4%            | 4%            | 4%            | 4%            |
| Share of structured sub-sectors                               |               |               | 2%            | 3%            | 3%            |
| Share of locally processed products (FCFA/KG)                 |               |               | 3%            | 3%            | 3%            |
| Share of animal resources (% of collected taxes)              |               |               | 2%            | 2%            | 2%            |
| Share of Agribusiness (% of annual incomes)                   |               | 0.10%         | 0.10%         | 0.10%         | 0.10%         |
| Share of imported food (F.CFA/Kg)                             |               | 2%            | 2%            | 2%            | 2%            |
| <b>1.2 Percentage of Contribution to financial resources</b>  |               |               |               |               |               |
| <b>ANADER</b>   |               |               |               |               |               |
| Government  | 40%           | 40%           | 40%           | 35%           | 35%           |
| Partners  | 55%           | 55%           | 55%           | 55%           | 55%           |
| Internally generated resources                                | 5%            | 5%            | 5%            | 10%           | 10%           |
| <b>Total</b>  | <b>100%</b>   | <b>100%</b>   | <b>100%</b>   | <b>100%</b>   | <b>100%</b>   |
| <b>CNRA</b>   |               |               |               |               |               |
| Government  | 40%           | 40%           | 40%           | 40%           | 40%           |
| Partners  | 40%           | 40%           | 40%           | 40%           | 40%           |
| Internally generated resources                                | 20%           | 20%           | 20%           | 20%           | 20%           |
| <b>Total</b>  | <b>100%</b>   | <b>100%</b>   | <b>100%</b>   | <b>100%</b>   | <b>100%</b>   |
| <b>2. Operations and Maintenance</b>                          |               |               |               |               |               |
| <b>2.1 Estimated Operation costs</b>                          |               |               |               |               |               |
| <b>ANADER</b>   | 15,700        | 19,911        | 20,042        | 20,765        | 20,976        |
| <b>CNRA</b>   | 6,872         | 6,967         | 7,254         | 7,446         | 7,650         |
| <b>Sub total</b>  | <b>22,572</b> | <b>26,878</b> | <b>27,295</b> | <b>28,210</b> | <b>28,626</b> |
| <b>2.2 Estimated available resources</b>                      |               |               |               |               |               |
| <b>ANADER</b>   |               |               |               |               |               |
| Government  | 6,280         | 7,964         | 8,017         | 7,268         | 7,342         |
| Partners  | 8,635         | 10,951        | 11,023        | 11,421        | 11,537        |
| Internally generated resources (service contract)             | 785           | 996           | 1,002         | 2,076         | 2,098         |
| <b>Sub total</b>  | <b>15,700</b> | <b>19,911</b> | <b>20,042</b> | <b>20,765</b> | <b>20,976</b> |
| <b>CNRA</b>   |               |               |               |               |               |
| Government  | 2,749         | 2,787         | 2,902         | 2,978         | 3,060         |
| Partners  | 2,749         | 2,787         | 2,902         | 2,978         | 3,060         |
| Internally generated resources                                | 1,374         | 1,393         | 1,451         | 1,498         | 1,530         |
| <b>Sub total</b>  | <b>6,872</b>  | <b>6,967</b>  | <b>7,254</b>  | <b>7,446</b>  | <b>7,650</b>  |
| <b>Sub total</b>  | <b>31,345</b> | <b>30,670</b> | <b>27,295</b> | <b>28,885</b> | <b>28,626</b> |

<sup>14</sup> This study was carried out in February 1998 for Ministère de la Recherche Scientifique et Technologique (MINREST) and MINAGRA, and titled: "Étude sur les mécanismes de financement pérenne de l'ANADER et du CNRA » (Study of the sustainable financing of ANADER and CNRA).

**Table 6 (con't)**

|   |                |               |               |               |               |
|---|----------------|---------------|---------------|---------------|---------------|
| <b>3. Investments</b>                           |                |               |               |               |               |
| ANADER  | (5,052)        | (4,381)       | 612           | (1,284)       | 2,332         |
| CNRA  | (3,721)        | 589           | 609           | 609           | 609           |
| Excess or (Needs)                               | (8,773)        | (3,792)       | 1,221         | (675)         | 2,941         |
| <b>4. Contribution to the FNDA</b>              |                |               |               |               |               |
| Government                                      | 9,029          | 10,751        | 10,918        | 10,246        | 10,402        |
| Partners  | 11,384         | 13,738        | 13,924        | 16,847        | 17,459        |
| Internally generated resources                  | 2,159          | 2,389         | 2,453         | 3,566         | 3,628         |
| Funds to be raised                              | 8,773          | 3,792         | 0             | 675           | 0             |
| <b>Sub total</b>                                | <b>31,345</b>  | <b>30,670</b> | <b>27,925</b> | <b>28,885</b> | <b>28,626</b> |
| <b>5. Resources mobilized on behalf of OPA</b>  |                |               |               |               |               |
| <b>5.1 Amount that need to be collected</b>     | <b>11,384</b>  | <b>13,738</b> | <b>13,924</b> | <b>14,399</b> | <b>14,597</b> |
| <b>5.2 Amount actually collected</b>            |                |               |               |               |               |
| DUS (droit unique de sortie)                    | 15,477         | 15,724        | 1,599         | 11,6243       | 16,11         |
| Others duties                                   | 0              | 1,440         | 2,255         | 2,410         | 2,442         |
| <b>Sub total</b>                                | <b>15,477</b>  | <b>17,163</b> | <b>18,138</b> | <b>18,491</b> | <b>18,791</b> |
| <b>5.3 Excess or (Needs)</b>                    | <b>4,093</b>   | <b>3,426</b>  | <b>4,214</b>  | <b>4,092</b>  | <b>4,194</b>  |
| <b>6 Global Excess or (Needs) for financing</b> | <b>(4,680)</b> | <b>(367)</b>  | <b>4,214</b>  | <b>3,417</b>  | <b>4,194</b>  |

Sources: Scenario 8 of EDIMAC report , the consultant who carried out the initial study of FNDA in February 1998.

In this scenario that the resources mobilized for the FNDA through indirect taxes contributed by the OPA, the block grant from the Government central budget and resources internally generated by ANADER and CNRA would, from year 3 onwards, be sufficient to cover the resources needed by both ANADER and CNRA for operations and investment purposes.

If the resources mobilized for the FNDA are not adequate due to the fluctuation of either the exported commodity prices, or the foreign exchange) additional alternatives measures could be envisaged, such as:

- Short term investment of excess cash resources;
- Put more efforts into competing for additional resources from other competitive grant funds or foundations;
- Increase contract services as well as use of extra land for commercial agricultural production; and
- Reduce operation cost and, if possible, attract funds from donors to finance expenses such as auditing and training.

## Appendix 4: Proposed Protection of Intellectual Property Rights at CNRA<sup>15</sup>

- 1) Conduct a census of all research results and programs, both pre- and post-colonial in all the three predecessor institutes, and in CNRA to date.
- 2) Determine, in collaboration with IRD (formerly ORSTOM, the French organization that largely financed research in much of West Africa and Madagascar) those research results that have been patented by the French. Attempt to work out an agreement with the French for a share of royalties on any patents that remain current that were the result of research conducted in Côte d'Ivoire.<sup>16</sup>
- 3) Establish an agreement with the *Organization Africaine pour la Protection de la Propriété Intellectuelle* and with the *Union Internationale pour la Protection des Obtentions Végétales et Animales (UIPOVA)* and become members.
- 4) Put in place a system for the protection of research results internally in CNRA.
- 5) Put into place a system for reviewing publications of researchers in professional journals that, while encouraging them in their professional growth and recognition, does not compromise research results (those not in the public domain) that can provide value to CNRA.
- 6) Include and enforce clauses in contracts with private sponsors of research regarding publication of research findings, and any royalties or commercial interest pertaining thereto. (Most contracts currently do not allow researchers to publish their findings on privately funded research before a period of 10 years is up, without the prior approval of the contracting entity). Ensure that such clauses are appropriate and not too constraining, but follow general international practice in this area.
- 7) Put into place a system of sanctions for those that do not follow the procedures for intellectual property protection.
- 8) Establish systems of control for research products at the research station level so that they cannot be sold indiscriminately without the CNRA brand name attached or other licensing structures respected.
- 9) Establish systems of inventory and security so that staff or visitors cannot merely walk into a lab and take a handful of seeds for their own personal use, multiplication, and sale.

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<sup>15</sup> Currently under review internally in the CNRA before being discussed with the Ministry

<sup>16</sup> There does not seem to be much recognition of the likely attitude that both the GOCI and the French will take on this subject; i.e. that this was either government-financed research (because of the contributions of the GOCI) and therefore public domain, or, from the French point of view, that they were paying for a research service and the results of that service were their property to do with as they liked.

- 10) Establish international agreements with collaborators in other research organizations and with other governments that will protect intellectual property and, where appropriate, lay out the structure for sharing in any rights pertaining to results obtained from collaborative research.
- 11) Establish an advisory council within CNRA that will review all research programs and results and establish levels of protection needed, review publications, and conduct activities leading to research protection.