World Agroforestry

WORLD AGROFORESTRY (ICRAF) WEST AND CENTRAL AFRICA REGION STRATEGIC PLAN (2018-2026)

Transforming Lives and Landscapes With Trees in West and Central Africa

August 2018

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Abbreviations and Acronyms

AFR100 :	African Forest Landscape Restoration Initiative
AGRHYMET :	Centre Régional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle
AgriSoft :	Provider of software solutions for precision agriculture and plantation management for the oil palm and banana industry
CAR :	Central Africa Republic
CBO :	Community-Based Organization
CCAFS :	Climate Change, Agriculture and Food Security
CDC :	Cocoa Development Centre
CEMAC :	Communauté Economique et Monétaire de l'Afrique Centrale
CFE :	Community Forest Enterprise
CGIAR :	Consultative Group on International Agricultural Research
CIFOR :	Center for International Forestry Research
CILSS :	Comité Permanent Inter-Etats de Lutte Contre la Sécheresse au Sahel (The Permanent Interstate Committee for Drought Con trol in the Sahel)
CIRAD :	Centre de coopération internationale en recherche agronomique pour le développement est l'organisme français de re cherche agronomiqueet de coopération internationale pour le développement durable des régions tropicales et méditerranéennes
COMIFAC :	Commission des Forêts d'Afrique Centrale
CORAF / WECARD :	Conseil Ouest et Centre africain pour la recherche et le développement agricoles
CRP :	Consortium Research Program
CSA :	Climate Smart Agriculture
CSRS :	Centre Suisse de Recherche Scientifique
CTA :	Technical Centre for Agricultural and Rural Cooperation
CVC :	Cocoa Village Centre
DRC :	Democratic Republic of Congo
ECOWAS :	Economic Community of West Africa States
FAO :	Food and Agriculture Organization of the United Nations
FMNR :	Farmer-Managed Natural Regeneration
FTA :	Forest, Trees and Agroforestry
GDP :	Gross Domestic Product
GLDC :	Grain Legumes
HT :	Humid Tropics
HR :	Human Resources
ICRAF :	International Centre for Research in Agroforestry NOW - World Agroforestry
ICRISAT :	International Center for Research in Semi Arid Tropics
IDOS :	Intermediate Development Outcomes

IITA :	International Institute of Tropical Agriculture
IPG :	International Public Good
IUCN :	International Union for Conservation of Nature
M&E :	Monitoring and Evaluation
MEL :	Monitoring, Evaluation and Learning
Mio :	Abbreviation for millions
MPI :	Multidimensional Poverty Index
NARES :	National Agricultural Research and Education Systems
NARS :	National Agricultural Research Systems
NAMA :	Nationally Appropriate Mitigation Action
NDCS :	Nationally Determined Contributions
NGO :	Non-governmental organization
NTFPS :	Non-Timber Forest Products
PICSA :	Participatory Integrated Climate Services for Agriculture
PRASAC :	Pôle Régional de Recherche Appliquée au Développement des systèmes Agricole d'Afrique Centrale
RLT :	Regional Leadership Team
ROPPA :	Réseau des organisations paysannes et de producteurs de l'Afrique de l'Ouest.
RRC :	Rural Resource Centre
SDG :	Sustainable Development Goal
SLOs :	System Level Outcomes
SLT :	Science Leadership Team
SRF :	Strategic Results Framework
SWOT :	Strengths, Weaknesses, Opportunities and Threats
UNCCD :	United Nations Convention to Combat Desertification
UNFCCC :	United Nations Framework Convention on Climate Change
USAID :	United States Agency for International Development
V4C :	Vision for Change
WASCAL :	West African Science Service Center on Climate Change and Adapted Land Use
WLE :	Water Land and Ecosystems

Executive Summary

The International Centre for Research in Agroforestry (ICRAF), also known by the brand name World Agroforestry, was created in 1978. It is an international research organization which aims to promote agroforestry research in developing countries. During the 1980s the organization operated as an information council focused on studying and documenting agroforestry in Africa. In 1991 ICRAF joined the **CGIAR** (formerly the Consultative Group on International Agricultural Research) to conduct strategic research on agroforestry throughout the tropics, and changed its name from Council to Centre.

Developed as a Centre of Excellence, World Agroforestry harnesses the resources and benefits of trees for people and the environment. By leveraging the world's largest repository of agroforestry science, technology and information, ICRAF develops knowledge and practices from farmers' fields, to ensure national food and nutrition security as well as environmental sustainability in countries of the developing tropics. Information and knowledge developed by ICRAF enables governments, international development agencies and farmers to harness the potential and power of trees to make farming and livelihoods sustainable and more environmentally-, socially- and economically-friendly.

On January 1, 2019, World Agroforestry (ICRAF) merged with the Center for International Forestry Research (CIFOR), uniting two of the world's leading organization focused on forestry and agroforestry. The merger strengthens our ability to provide the evidence and innovative solutions needed to scale up investment in sustainable development and address the global challenges of our time. While the two organizations will continue to operate under their current names for the foreseeable future, combined we will be well-positioned to develop key innovations in finance and blended development, thereby accelerating the impact of our extensive science and development initiatives.

The global headquarters of World Agroforestry is based in Nairobi, Kenya. The organization operates six regional research-for-development programs in 30 countries of Sub-Saharan Africa, Asia and Latin America. The regional office of ICRAF's West and Central Africa, (ICRAF-WCA) program, is based in Yaoundé, Cameroon.

Since its inception, ICRAF has made significant contributions to agroforestry science, technology and development. The organization coordinates its research around four priority themes, namely:

i) **Improving Governance of Tree Crop Landscapes for Resilient** Green Economies, Climate Change and Sustainable Environmental Services;
ii) **Land Health Evaluation**, Restoration and Investment Decisions;
iii) **Resilient Productivity** and Profitability of Agricultural Systems with Trees;
iv) **Tree Productivity** and Diversity – Realizing Economic and Ecological Value from Tree Genetic Resources.

The West and Central Africa region is the organization's flag bearer in participatory tree domestication and on-farm tree biodiversity conservation all aimed at enhancing the livelihoods of smallholder farmers through increased incomes and other benefits derived

from indigenous trees and shrubs. Through decades of experience and technical expertise, ICRAF-WCA, in collaboration with stakeholders and national and international partners, has enabled at least 3 million people to achieve reasonable levels of food and nutrition security, and contributed to lifting about 2 million people (50% of whom are women) out of poverty. The program work has also contributed to saving over 4 million hectares of land from degradation in the WCA region. ICRAF-WCA has developed and scaled up innovations in the domestication of indigenous tree species, tree-based farming systems, landscape restoration, non-timber forest product value chains, and successfully provided agricultural advisory delivery systems.

This ICRAF-WCA Strategic Plan (2018-2026) presents the organization's future direction, the pathways to achieve its objectives, vision and mission, and the resources required for program implementation. Consistent with the organization's global research priorities and considering emerging challenges and opportunities in the West and Central Africa region, as well as building on past experiences, and ongoing programs, ICRAF-WCA has identified three main strategic areas for intervention, namely:

i) **Landscape Restoration**,
ii) **Climate Change Adaptation and Mitigation**,
iii) **Tree Crop Value Chain Development.**

These three intervention areas form the core of ICRAF-WCA's Strategic Plan (2018-2026). Thematic areas will be connected through cross-sectoral and transdisciplinary approaches to generate knowledge products and services that will lead to impacts through the support
of two platforms which include:

i) **Science Quality**
ii) **Accelerating Impact** and Learning and Capacity Development.

In implementing this Plan ICRAF-WCA will adhere to the overall organizational Value Propositions, Operating Principles, Values and Approaches as elaborated in the refreshed Corporate Strategy (2017-2026) and Business Model.

This ICRAF-WCA Strategic Plan covers nine years (2018-2026), and is a local adaptation of the ICRAF Global Corporate Strategy 2017-2026 (ICRAF 2017). Formulation of this ICRAF-WCA Strategic Plan was motivated by the following recent developments:

1. Adoption of the ICRAF Global Corporate Strategy 2017-2026 (ICRAF 2017) and ICRAF's Business Model (ICRAF 2018).

2. Continuing evolution of the CGIAR Research Programs to promote and enhance opportunities for collaboration between CGIAR Centres and relevant partners.

3. Significant increase in regional agricultural research portfolio and budgets from USD 5,014,102 in 2010 to USD 17,300,000 in 2018.

4. Geographic expansion of ICRAF's operations in the region.

5. The need for ICRAF's work to reflect the rapid socio-economic changes in the West and Central Africa region, and its implications for the regional research agenda; and

6. The need to mobilize ICRAF to become a more effective partner in larger and more diverse research efforts, thereby increasing its capacity to achieve synergies while optimizing investments in science, technology and development for generation of International Public Goods (IPGs).

ICRAF-WCA's core business for the next nine years will focus on multi-disciplinary research-in-development to scale up agroforestry technologies for sustainable national food and nutrition security, resilience, poverty reduction and environmental safety in West and Central Africa. Specifically, the organization will address, the three focus areas. We envision that this strategic orientation will generate scientific evidence in these areas, contribute to capacity development and training of partners, effectively communicate and disseminate research outputs for greater impacts.

These strategic orientations will pursue the following three specific objectives:

Objective 1: Generate scientific evidence outputs
Objective 2: Develop and strengthen the capacity of partners and reinforce partnerships;
Objective 3: Improve communication of research outputs.

During the 9-year period of this Strategic Plan, our work in developing knowledge products will increasingly focus on knowledge services and impacts by advancing the "research-in-development" paradigm. Thus, as stipulated in ICRAF's Corporate Strategy, emphasis will be put on linking the '*science of discovery*' to the '*science of delivery*' in West and Central Africa. Building on our strengths as well as the need to contribute to ICRAF's global goals and beyond, the Regional Program selected three strategic intervention areas:

Focus Area 1: Landscapes Restoration;
Focus Area 2: Climate Change Adaptation and Mitigation;
Focus Area 3: Sustainable Value Chains for Tree Crops.

One of the primary objectives of the ICRAF-WCA Strategic Plan (2018-2026) is to improve the quality of science in the West and Central Africa region through establishment of a core group of experienced scientific and administrative staff and personnel review system. Furthermore, the region's dynamic partnerships comprise both permanent and long-term, and more opportunistic and tactical partnerships in the short-term. Most importantly, all forms of partnerships are based on the potential to add value to our outcomes.

This Strategic Plan document has been designed for internal use by ICRAF staff, and we hope it will also convey important messages to our stakeholders, partners, and collaborators in order to open new windows of opportunity for diversified and mutually beneficial partnerships and collaboration.

Figure 1 : A nursery operator watering cocoa seadlings

1. Introduction

1.1. Overview of World Agroforestry

World Agroforestry (ICRAF) was created in 1978 to promote agroforestry research in developing countries. During the 1980s the organization operated as an information council focused on studying and documenting agroforestry in Africa. In 1991 ICRAF joined the **CGIAR** (formerly the Consultative Group on International Agricultural Research) to conduct strategic research on agroforestry throughout the tropics, and changed its name from Council to Centre.

The Centre's extensive work has contributed significantly to the development of strategies and solutions to address the multitude of environmental, national food security and poverty reduction challenges in different ecologies of the developing world.

Developed as a Centre of Excellence, World Agroforestry harnesses the resources and benefits of trees for people and the environment. Through leveraging the world's largest repository of agroforestry science, technology and information, ICRAF develops knowledge and practices, from farmers' fields, to ensure national food and nutrition security as well as environmental sustainability in countries of the developing tropics. Information and knowledge developed by ICRAF enables governments, international development agencies and farmers to harness the potential and power of trees to make farming and livelihoods not only more environmentally-, socially- and economically-friendly, but also sustainable.

The Global Headquarters of World Agroforestry is based in Nairobi, Kenya. The organization operates six regional research-for-development programs in 30 countries of Sub-Saharan Africa, Asia and Latin America. The headquarters of ICRAF's Sub-Saharan Africa West and Central Africa, (ICRAF-WCA) program, the largest region of World Agroforestry, is based in Yaoundé, Cameroon.

1.2. World Agroforestry West and Central Africa Region

The West and Central Africa (WCA) region occupies a geographical area of 1,200 million hectares covering 21 countries, namely Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gabon, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo (see Figure 1). The population of WCA is estimated at 512 million (Worldometers 2018) and the region is characterized by highly diverse landscapes, peoples, cultures and institutions. It is predominantly rural, with 60-80%, depending primarily on agriculture for their livelihoods.

The WCA region consists of three agro-ecological zones, namely:

i) **the dry Sahel zone**, a semi-arid landscape stretching from Senegal to Chad;
ii) **the sub-humid zone**, extending from the coast of Guinea to the Federal Republic of Nigeria and
iii) **the Congo Basin**, a humid forest zone of Central Africa from Cameroon to the Democratic Republic of Congo. In addition, there are wide variations in population density, climate, soil types, vegetation and altitude.

Figure 2 : World Agroforestry West and Central Africa Region, indicating office locations in Abidjan, Bamako and Yaoundé

Countries in the West and Central Africa region share several challenges, including poverty, food and nutrition insecurity, degraded social and environmental resources, poor access to regional and global markets, conflicts, as well as inadequate support from national governments in the areas of agricultural research and development. These countries are regarded among the poorest in the world according to the Multidimensional Poverty Index (MPI) (Alkire and Robles 2017) which estimates that, 60-90% of its people are within the US$1.90 day^{-1} poverty line. Hunger and abject poverty are endemic in the region, especially amongst the rural populations. Despite various investments in the agricultural sector, productivity remains low and competitiveness is comparatively weak.

1.3. Context of the ICRAF-WCA Strategic Plan (2018-2026)

Since its inception in 1978, World Agroforestry has made significant contributions to agroforestry science, technology and development. The West and Central Africa region is ICRAF's flag bearer in participatory tree domestication and on-farm tree biodiversity conservation aimed at enhancing the livelihoods of smallholder farmers through increased incomes and other benefits derived from indigenous trees and shrubs (Kalinganire et al. 2008; Leakey et al. 2003; Tchoundjeu et al. 2006, 2010; Ræbild et al. 2011).

This ICRAF-WCA Strategic Plan (2018-2026) presents the future direction of the organization's regional program, the pathways to achieving its objectives, vision and mission, and the resources required for program implementation.

The global community is committed to tackling climate change an to achieving sustainable development through 17 Sustainable Development Goals (SDGs). Commitments have also been made to address emerging issues such as migration. Furthermore, the African Union Agenda 2063 is designed to ensure that by 2063, African countries will be among the best performers in global quality of life measures. In this context, World Agroforestry has designed and adjusted its Corporate Strategy to respond to changes in the CGIAR System aimed towards contributing to achievement of the SDGs.

ICRAF-WCA developed this Strategic Plan to contribute to achieving the goals of World Agroforestry as well as those of the CGIAR System and the global community. Guided by the ICRAF Corporate Strategy which is aligned to the CGIAR System Strategic Results Framework (SRF) – 2016-2030, ICRAF-WCA aims to contribute to about 20% of ICRAF's targets: have an impact on more than 3 million hungry people, 2 million poor people (50% of whom will be women), and restore over 4 million hectares of degraded lands. In line with ICRAF's commitment, the Regional Program will work on 11 Intermediate Development Outcomes (IDOs) under three CGIAR System-Level Outcomes, except food safety (for which strategic alliances with other institutions are required). ICRAF-WCA will also program its work alongside 24 of the 30 sub-IDOs (see World Agroforestry ICRAF Corporate Strategy 2017-2026).

1.4. The Development Process

During the development process of this Strategic Plan, ICRAF-WCA adopted an inclusive and participatory process which ensured that all relevant partners had an opportunity to contribute at every stage of the process.

First, an internal workshop and consultation was organized in Bamako, Mali from 29 January to 2 February 2018 where a comprehensive SWOT Analysis of ICRAF-WCA was conducted. The teams also critically reviewed the regional research agenda and program, and identified the strategic focus areas.

The Bamako workshop was followed by a second one from 9 to 11 April 2018 in Grand Bassam, Côte d'Ivoire, involving all ICRAF-WCA researchers, regional policy makers and private sector partners. The team reviewed the strategic focus areas identified in Bamako and formulated the required strategic interventions. Following this meeting, an initial draft of the ICRAF-WCA Strategic Plan (2018-2026) was prepared for further review and validation.

A stakeholders' meeting was then convened in Yaoundé, Cameroon from 3 to 6 September 2018, involving ICRAF-WCA staff, donors, private sector partners, national government policy makers, national and international researchers and relevant farmer organizations. The draft ICRAF-WCA Strategic Plan (2018-2026), was presented to stakeholders for comments and inputs. After extensive comments and discussions, the stake-holders validated and endorsed the draft document following assurances from ICRAF-WCA management that the stakeholders' inputs and comments would be incorporated into the final draft of the document.

Figure 3 : Unimproved jujuber (Zizuphus mauritania plant)

Figure 4 : Comparing improved with non - improved jujuber (Ziziphus mauritania)

Figure 5 : Participants of the WCA strategic plan writeshop posing for a group photo at Grand-Bassam

2. ICRAF-WCA Values and Operating Principles

Our Strategy

Consistent with the World Agroforestry Corporate Strategy (2017-2026), our strategy at ICRAF-WCA is to: a) provide direction and guidance to regional staff to instill focus, empower them to make decisions and foster a sense of purpose and pride b) to more clearly describe our work to stakeholders and partners in West and Central Africa and c) to appeal to investors and development partners to continue investing in agroforestry and in ICRAF-WCA.

Our Vision

Through increased uptake of agroforestry practices, smallholder farmers in West and Central Africa will improve their food and nutrition security, income, health, energy needs and shelter while maintaining social cohesion and environmental sustainability.

Our Mission

To harness the multiple benefits that trees provide for agriculture, livelihoods, resilience and the future of our planet, from farmers' fields through to continental scales.

It is therefore proposed that approaches be developed to tackle the multiple constraints that undermine productivity, recognizing that livelihoods are nested within larger agro-ecological, markets, institutional and social systems, which must be addressed to function effectively at a larger scale. Improving productivity not only requires better, appropriate technology options, but also incentives and service delivery systems that facilitate adoption.

ICRAF-WCA is one of the six regional programs through which World Agroforestry conducts its work with technical support from our Nairobi-based laboratoriesand units. It is the largest region and has been developed into a Centre of Scientific Excellence. Leveraging the world's largest repository of agroforestry science,technology and information, the organization develops knowledge, technologies and practices, from farmers' fields to ensure food security and environmental sustainability.

Specifically, ICRAF-WCA's puts emphasis on:

1. Providing robust scientific evidence and analyses;
2. Making available social and technical solutions;
3. Assisting with design, decision and delivery options;
4. Developing capacities, convening and strengthening partnerships; and
5. Measuring impacts and outcomes.

The region operates in the context of three operating principles:

i) **People:** collaboration and partnership; learning; attracting, nurturing, and rewarding talent;
ii) **Science:** quality science; communicating for accelerated impact; value for money; testing development options;
iii) **Processes:** efficiency and effectiveness; accountability; subsidiarity; empowerment.

These principles are reinforced by our four **core values** of:

i) **Professionalism**,
ii) **Creativity**,
iii) **Mutual Respect**,
iv) **Inclusiveness.**

Figure 6 : ICRAF Sahel team posing for a group photo with The WCA Regional Leadership Team and some members of the Senior Leadership team

3. Institutional Organization of ICRAF-WCA

ICRAF-WCA has three functional country offices in Cameroon, Mali and Côte d'Ivoire. The Humid Lowlands of the West Africa Regional Program, covering the humid and sub-humid forest zones of West and Central Africa was established in 1987 with its headquarters in Yaoundé, Cameroon. This was the first World Agroforestry office established outside Kenya.

The Humid Tropics Regional Program has been the flag bearer in participatory tree domestication and on-farm tree diversity conservation for the past three decades (Leakey et al. 2003; Tchoundjeu et al. 2006, 2010). The aim of this participatory approach is to improve the livelihoods of smallholder farmers through increased incomes and other benefits from indigenous trees and shrubs.

The office in Mali was established in 1989 in Bamako and is responsible for the dry Sahel zone that stretches from Senegal in the west through southern Mali, northern Ghana, Burkina Faso, southern Niger, and northern Nigeria, the coastal and dry savannas of Guinea to Chad in the east.

The activities of the Sahel program focus on non-timber forest products (NTFPs), live fences, fodder and food banks, parklands and domestication of key tree species including *Adansonia digitata, Faidherbia albida, Parkia biglobosa, Tamarindus indica, Vitellaria*

paradoxa, and *Ziziphus mauritiana,* (Kalinganire et al. 2008; Ræbild et al. 2011).
In an approach aimed at restoring degraded lands, the recent focus has been on the role that farmer-managed natural regeneration (FMNR) can play in shaping agricultural systems that can sustainably improve productivity and livelihoods in the parklands of the Sahel region.
In 2006, ICRAF merged the Humid Lowlands program based in Cameroon with the Sahel program based in Mali to form the "West and Central Africa Region".

The Côte d'Ivoire office was opened in Abidjan in 2010 to implement a public-private partnership project on cocoa with funding from Mars Inc. The objective of this project is to rejuvenate the cocoa sector in the country. The initiative pioneered cocoa grafting technologies for efficient rehabilitation of ageing cocoa plantations, promoted rural entrepreneurship, and engaged policy makers and private sector partners to ensure long-term use and success of the diversified production systems.

Recent activities target restoration of cocoa landscapes for increased productivity and profitability, as well as enhanced environmental conditions and improved livelihoods (Diby et al. 2016; Kahia et al. 2016; Kouakou et al. 2016; Kouame et al. 2016a&b).
Considering its size, agro-ecological and socio-political differences in the West and Central Africa region, three sub-units were created to facilitate operations:

1) ***The Sahel Sub-Unit*** with its main office in Bamako, Mali and covering the drylands of West Africa from Senegal to northern Nigeria and Niger;

2) ***Central Africa Sub-Unit*** based in Yaoundé, Cameroon, focusing on the Congo Basin, but extending activities to the drier northern parts of Cameroon and the Central Africa Republic, as well as Chad; and

3) ***West Africa Coast Sub-Unit*** with an office in Abidjan, Côte d'Ivoire, covering the humid coastal area and dry savannas from Guinea to Nigeria.

ICRAF-WCA is headed by a Regional Director who is supported by sub-unit representatives, (Sahel, Central Africa and West Africa Coast), a Principal Scientist and regional enablers (Human Resources and Administration, Finance, and Communications), who make up the Regional Leadership Team (RLT) (Figure 7). The team meets at least four times a year (face-to-face or virtually) to discuss issues touching on regional research and development programs, partnerships, science quality, administration, human resources and finance.

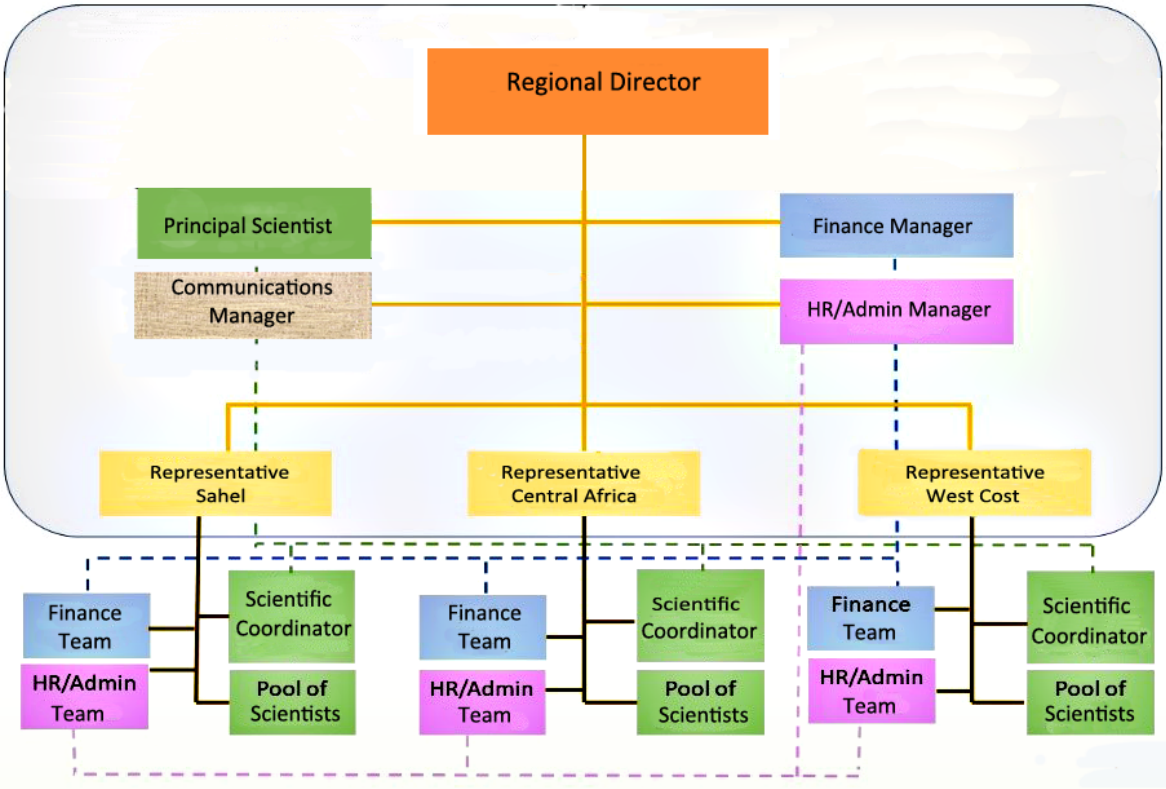

Figure 7 : Organogram of ICRAF-WCA

The Sahel, Central Africa and the West Africa Coast sub-unit representatives coordinate activities in countries under their portfolio and work closely with governments, local partners and donors to meet the objectives of ICRAF-WCA. Research staff and enablers in each sub-unit work in close collaboration with country representatives.

This ICRAF-WCA Strategic Plan (2018-2026) is designed to improve the quality of science in the West and Central Africa region. To achieve this objective, a Principal Scientist ensures science quality and collaborates with corresponding science quality leaders in each of the three sub-units to ensure high quality scientific outputs. The science quality team supports the work of the region across the three strategic research areas and also facilitates proper linkages with the global research agenda and themes.

A priority of ICRAF-WCA's strategy is to promote visibility of the organization as a reference centre in agroforestry in West and Central Africa, thus ensuring that more actors and stakeholders have access to, and use our research and development results.

Finances in the region are managed by a Regional Finance Manager, who provides financial leadership and management. S/he facilitates innovation in business processes and ensures that an efficient financial information system is maintained. The Regional Finance Manager engages, inspires, motivates and leads a team of dedicated staff to provide the best financial management practices and support to the programs.

Administration and human resources is managed by a Regional Administrative and Human Resources Manager who coordinates the administration and human resources activities. S/he also advises the Regional Director, country representatives and staff on administration and human resource matters.

The Regional Communications Manager works closely with the Global Communications Department of World Agroforestry in Nairobi and oversees the communications program of West and Central Africa.

Figure 8 : Trees leaves are important source of fodder for livestock in the Sahel (Goz -Beida, Easter Chad)

4. Situational Analysis and Strategic Orientation

4.1. SWOT Analysis of ICRAF-WCA

In developing this ICRAF-WCA Strategic Plan (2018-2026), we adopted an inclusive and iterative bottom-up approach with contributions from a wide spectrum of scientists, managers and enablers from the West and Central Africa region and from ICRAF headquarters in Nairobi. A situational analysis was conducted using the SWOT (Strengths, Weaknesses, Opportunities and Threats) approach. The outcome (see Table 1) comprised identification of the strategic axes and intervention areas, the resources required to operationalize the Strategic Plan, organizational modalities, management of potential risks, monitoring and evaluation, as well as the budget required and a resource mobilization strategy.

Table 1: Outputs of the SWOT analysis

Strengths	1.	ICRAF approaches agroforestry as a **transdisciplinary science** that brings together researchers and end-users to seek solutions to real **world** problems through teaching and learning.
	2.	ICRAF is the **only Centre of Excellence working on agroforestry research-for-development** in the WCA region.
	3.	Over the years, ICRAF-WCA has built strong and lasting relationships with its partners from both the **public and private sectors.**
	4.	ICRAF-WCA has developed **compelling agroforestry products** (RRC, CDC/CVC, elite accessions, etc.) which have had positive impacts on the livelihoods of farmers, the profitability of private businesses and the environment.
	5.	ICRAF has a comparative advantage in supporting capacity development of its partners and other stakeholders, including public institutions (NARS, universities, meteorological services, development programs, etc.), NGOs and private sector entities. This advantage will be strengthened with the new ICRAF-WCA strategy.
Weaknesses	1.	ICRAF-WCA has a project-based organizational structure with a **very limited core budget** (redistribution of part of the overheads to ICRAF six regions). While such a structure has its own benefits, it could impede implementation of a medium- to long-term actionable strategy. Projects usually have **limited lifespans** with dedicated budgets; it is therefore necessary to have a core budget that allows for transition between project phases and support some of the fixed costs.
	2.	ICRAF has **complex administrative procedures, typical of CGIAR Centres**, which reduces efficiencies and effectiveness of the operations, particularly in the regions, as most of the decision-making processes must cascade up to the headquarters. A more decentralized management with more responsibility devolved to the Regional Director and the unit representatives would speed up key administrative operations.
	3.	The WCA region has a **limited number of intermediate level researchers** (C4-C6) which negatively affects field operations and supervision of younger scientists, and ultimately the quality and quantity of scientific outputs.

Opportunities	1.	Different **policy frameworks** and initiatives for climate change mitigation and adaption, as well as landscape restoration that increasingly recognize the importance of agroforestry exist (SDGs, UNFCCC, NDCs, Bonn challenge, etc.). Most of these cover the WCA region where climate change has had one of the most devastating impacts on the population and the environment.
	2.	**The long-term resilience** of tree-based interventions and the role of trees in addressing global warming has been demonstrated by ICRAF over the years. The current context is therefore favourable for ICRAF-WCA to use its agroforestry expertise to support the operationalization of these **climate change-based initiatives**.
	3.	ICRAF has developed expertise in supporting large-scale development initiatives for accelerated learning.
	4.	The **economic and social values of trees and tree products** are fully recognized by farmers and by the private sector. The WCA region has been the largest producer of key tropical tree species products (cocoa, palm oil, cashew nut, gum arabic, Allanblackia and shea butter) for several decades There is therefore, a strong interest among the public sector, international development and private donors to invest in tree-based economies in the region. ICRAF-WCA could serve as a technical and scientific partner for the implementation of these investment projects and programs.
Threats	1.	Insecurity, mainly caused by terrorism, civil unrest, and political instability are issues of major concern in many parts of the WCA region.
	2.	While ICRAF-WCA has developed a variety of efficient and proven technologies, policy barriers and weak institutions in some countries have hindered the scaling-up of these technologies. ICRAF-WCA has contributed to addressing these challenges through policy dialogue and advocacy.
	3.	Some traditional donors of the CGIAR system are now redirecting their funds to development projects, which limits research funding opportunities for ICRAF.

4.2. Strategic Orientation

Based on the results of the SWOT, analysis, ICRAF-WCA's core business for the next nine years will focus on multi-disciplinary research-in-development (Figure 9), to scale up agroforestry technologies for sustainable national food and nutrition security, resilience, poverty reduction and environmental safety in the region. Specifically, ICRAF-WCA will address climate change adaptation and mitigation, landscapes restoration and the development of sustainable value chains for tree crops.

This ICRAF-WCA strategic orientation will generate scientific evidence in these areas. It will also contribute to capacity development and training of partners, and effectively communicate and disseminate research outputs for greater impact. These strategic orientations will aim to achieve the following three specific objectives:

Objective 1 : Generate scientific evidence outputs
Objective 2 : Develop and strengthen the capacity of partners and reinforce partneships;
Objective 3 : Improve communication of research outputs.

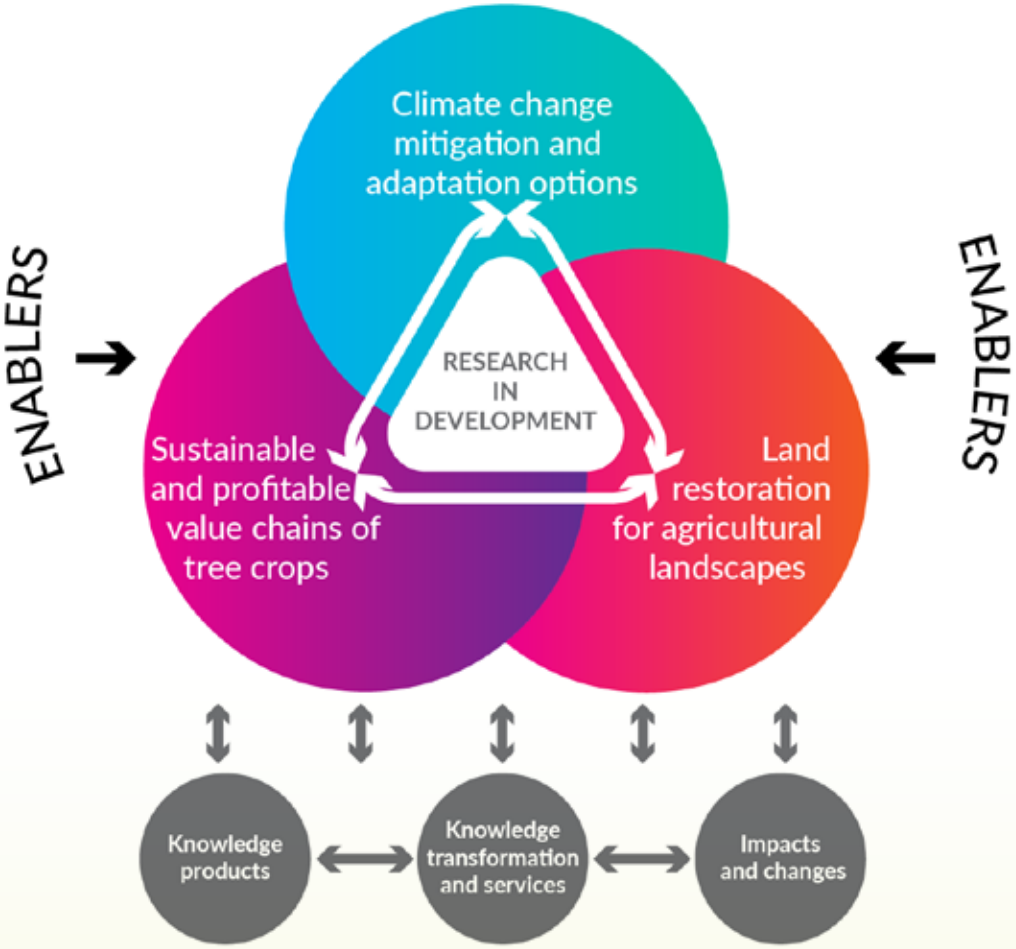

Figure 9 : Research-in-development - Framework of key elements of the ICRAF-WCA Strategy (2018-2026)

4.3. Strategic Intervention Areas

Our work in developing knowledge products will increasingly focus on knowledge services and impacts by advancing the "research-in-development" paradigm (Coe et al. 2014). Thus, as stipulated in ICRAF's Corporate Strategy, emphasis will be put on linking the '***science of discovery***' to the '***science of delivery***' in West and Central Africa. To do this, the following three categories of hypotheses must be tested by research activities undertaken in the WCA region:

i) **Theory of change understanding** (exploratory or to fill knowledge gaps),
ii) **Theory of place** (geography and context impacts),
ii) **Theory of induced change** (impact pathways between investment and expected transformative outcomes in Research-in-development projects).

These hypotheses would be framed around the following key performance domains:

i) **profitability**,
ii) **environmental sustainability**,
iii) **social inclusion**,
iv) **good governance**,
v) **sound management**.

Impact pathways to scale for transformational changes will be achieved by strengthening our partnerships with governments, national and regional institutions, NGOs, international organizations, the private sector, communities and civil society as illustrated in Figure 10.

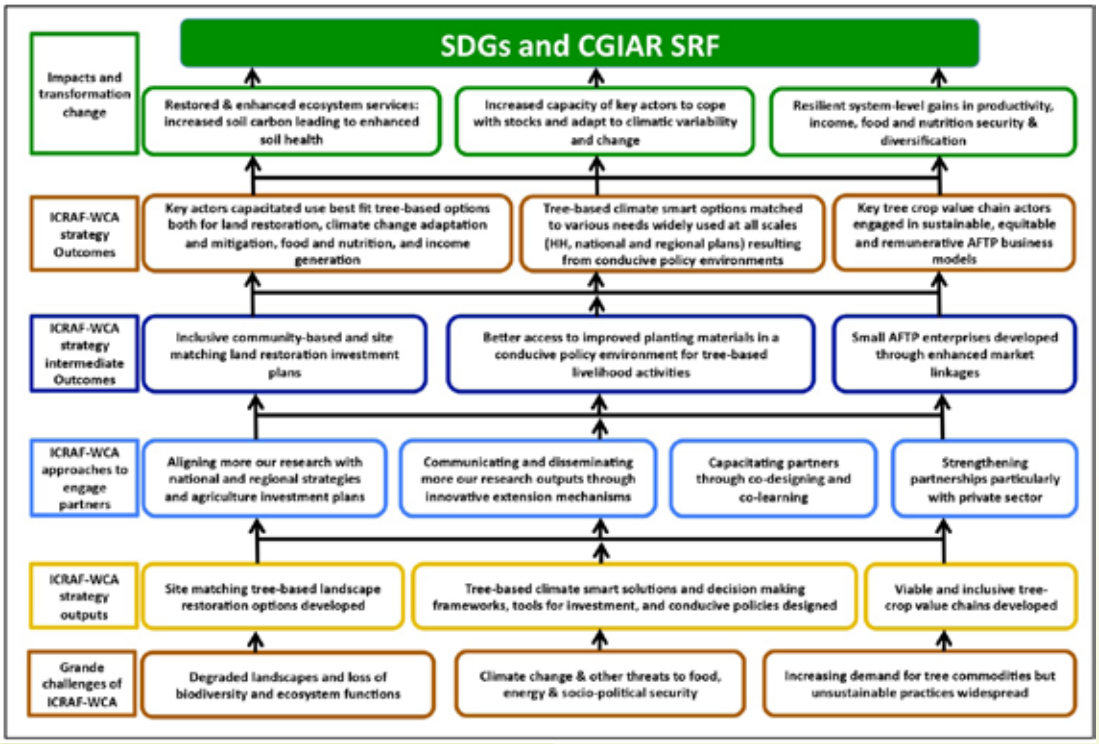

Figure 10 : ICRAF-WCA Strategy Theory of Change and Impact Pathway

Based on our strengths, current research portfolio, national and regional priorities, various initiatives on land restoration (Bonn Challenge, AFR100, '4 per mille' initiative, etc.) and climate change (global, regional and national CSA alliances, NAMA facilities, NDCs) as well as the need to contribute to ICRAF's global goals and beyond (including CGIAR SLOs and SDGs), we have selected three strategic intervention areas as key focal areas for the next nine years. These include:

Focus Area 1 : Landscape Restoration
Focus Area 2 : Climate Change Adaptation and Mitigation
Focus Area 3 : Sustainable Value Chains for Tree Crops

These three focal areas are in line with ICRAF's global cross-sectoral and transdisciplinary approaches, as well as its four global priority themes as shown in the Matrix in table 2.

Table 2 : Matrix of West and Central Africa focus areas x ICRAF Priority Themes

ICRAF-WCA Focus Areas	World Agroforestry Priority Themes			
	Tree Productivity & Diversity	Land Health Decisions	Resilient Livelihood Systems	Greening Tree Crop Landscapes
Landscape Restoration	***	***	**	**
Climate Change Mitigation	***	***	***	**
Tree Crops Value Chains	***	*	***	**

*Overlap * = some, ** = moderate, *** = significant*

These themes are supported by two platforms, namely:

i) **Science Quality Platform**
ii) **Accelerating Impact, Learning and Capacity Development.**

The first platform provides guidance and support to scientists and their partners in research and data design,knowledge management and geospatial analyses. The second platform promotes greater use of the knowledge and innovations that ICRAF co-generates with its national and global partners, including policy makers, the private sector and farmers.

4.3.1. Strategic Area 1: Landscape Restoration

Land degradation is understood to be the reduction or loss of biological or economic productivity resulting in decreased yields, incomes, food insecurity and loss of vital ecosystem services (UNCCD 1994). The health and resilience of land resources (e.g., soil, water and biodiversity) are largely determined by management practices, governance systems and environmental changes. In West and Central Africa, land degradation is widespread and a serious issue. The conversion of natural ecosystems and unsustainable land use contributes not only to land degradation, but also to increased carbon emissions and diminished regional and global rainfall.

In the West and Central Africa region, increasing land degradation could force 135 million people to migrate in the next 30 years (UNCCD 2016). In line with reversing projected trends, the 15 Sustainable Development Goals (SDGs) together with the Paris Agreement on Climate Change envision that land rehabilitation and restoration are significant actions in development and for addressing climate change.

Consequently, many WCA countries are committed to addressing several land restoration initiatives including AFR100[1], The Bonn Challenge[2] and land degradation neutrality. ICRAF has considerable expertise to help countries in West and Central Africa

[1] **AFR100** (The African Forest Landscape Restoration Initiative) is a country-led effort to bring 100 million hectares of land in Africa into restoration by 2030. Countries that committed: Senegal, Guinea, Liberia, Cote d'Ivoire, Ghana, Togo, Benin, Niger, Chad, Cameroon, Central African Republic, Republic of Congo, Democratic Republic of Congo [https://afr100.org]

[2] **The Bonn Challenge** is a global effort to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020, and 350 million hectares by 2030. Countries that committed: Guinea, Liberia, Cote d'Ivoire, Ghana, Benin, Nigeria, Niger, Chad, Cameroon, CAR, Congo, DRC [http://www.bonnchallenge.org]

to meet their commitments as well as to facilitate the engagement of other countries to participate in these initiatives. Our actions will focus not only on land restoration as a solution, but will also strive to address issues of food and nutrition insecurity, inadequate water supply, high risk of catastrophic events, climate change and loss of biodiversity. This will be done through national and regional restoration pledges by combining options that fit each context in mosaic landscapes. Such actions will involve turning highly degraded areas into sustainable croplands, agroforestry areas and woodlots of native tree species. The ultimate goal is to provide resilient livelihoods and ecosystem health to the populations living in the region. ICRAF-WCA's key intervention areas and outcomes for landscape restoration are presented in table 3.

Table 3: Key Intervention Areas and Outcomes for Landscapes Restoration

Key Intervention Areas	Expected Outcomes
Support implementation of national and regional restoration pledges at various scales	National and regional partners in at least five countries have developed restoration programs that use ICRAF-WCA evidence-based frameworks to cost-effectively combine options that fit each context in mosaic landscapes, at various scales
Build evidence of tree-based restoration beyond increasing vegetation cover to include ecosystems services like carbon sequestration, water regulation, nutrient cycling, increase yield and income	At least five WCA countries have developed and implemented agroforestry-based landscape restoration for increased vegetation cover and delivery of ecosystem services on about 4 million hectares based on the data and guidelines generated by ICRAF-WCA
Support participatory redesigning of existing toolkits for cost-effective land restoration actions at all scales, considering short and long term benefits of the interventions and needs of the beneficiary communities	The capacity of national partners built through co-learning. They use agroforestry-based restoration principles and tools to achieve pledged commitments in their respective countries
Support development of a landscape restoration HR/capacity building plan for the region through partnerships with universities, NARS and other CGIAR centres	Principles, guidelines and tools are included in university curricula for agroforestry-based landscape restoration

4.3.2. Strategic Area 2: Climate Change Adaptation and Mitigation

While the humid and dryland areas of the West and Central Africa region are seriously affected by climate change and related issues, the solutions vary from one zone to another. These zones are vulnerable due to their dependence on rainfed agriculture. Therefore, delivering on these issues will be achieved with appropriate interventions which address the challenge of productivity and mitigate the effects of climate variability and change. Addressing these issues successfully requires promotion of **climate-smart agriculture** among key stakeholders who have the capacity to analyse and understand environmental, economic and social challenges and develop **responsive policies** and institutional settings.

In the humid zones of WCA, deforestation and forest degradation resulting from extensive farming practices, logging and artisanal mining are the most critical issues. There is an urgent need to help decision makers achieve zero-deforestation, an objective to which they are committed. ICRAF-WCA offers a range of options to address this issue. These include: more sustainable agriculture, sustainable agroforests and diversification, establishment of tree crop plantations on fallow land by using temporary shade and integration of high-value trees to create shade/tree cover (micro-climate) that provide multiple benefits of agroforestry, such as carbon and non-carbon benefits, incomes, nutrition security, and fuel wood.

In the Sahel, declining agricultural productivity, shortage of NTFPs and fuel wood are major concerns. ICRAF-WCA will help decision makers to improve national food and nutrition security, create jobs and contribute to building the resilience of people and farming systems to climate extremes and disasters. This will be done by promoting **tree-based climate-smart agriculture**, planting multipurpose trees and shrubs to improve soil fertility, reducing erosion and recycling nutrients, regulating water and reducing run-off, improving water infiltration and groundwater recharge, providing fodder, fuel wood, incomes and fruit for balanced nutrition.

ICRAF-WCA has acquired a collection of improved tree varieties/accessions and strong expertise in tree vegetative propagation techniques to shorten tree fruiting cycles.

Another area of expertise is strengthening the capacity of stakeholders in using climate information for planning livelihood activities through the PICSA approach (Dorward et al. 2015; Bayala et al. 2017; Dayamba et al. 2018) and mechanisms for delivering advisory services to farmers in Rural Resources Centres; (Degrande et al. 2012, 2014). Since climate change negatively affects food and nutrition security, full integration of tree-based climate-smart agricultural production and other livelihood policies, programs, plans and related activities are required to effectively manage the effects of climate change. This is consistent with the UNFCCC decision of adopting agroforestry as a climate mitigation option and CCAFS' list of 10 best innovations for adaptation to climate change in agriculture (Dinesh et al. 2017). Table 4 presents ICRAF-WCAs intervention areas and outcomes for climate change adaptation and mitigation.

Table 4: Key Intervention Areas and Outcomes for Climate Change Adaptation and Mitigation

Strategic Intervention Areas	Expected Outcomes
Strengthen capacities of climate information providers to generate and deliver tailored climate information and services at scale to build resilience to climate variability and change	Stakeholders use climate information and services to better plan livelihood activities to cope with climate variability and change in at least five WCA countries
Develop field-based evidence on tree-based climate-smart agriculture in regional and country processes and events on climate change adaptation and mitigation	Tree-based climate-smart agriculture is prioritized in regional and country policies and programs related to climate change adaptation and mitigation implemented in at least five WCA countries
Th capacity of NARES built to design tree-based climate-smart agriculture training materials leading to revision of academic curricula and national research programs	NARES of at least five WCA countries have knowledge and skills to integrate tree-based climate-smart agriculture into their teaching curricula and research activities
Support and facilitate the development of evidence-based policy and investment plans of context-specific tree-based climate-smart innovations with relevant stakeholders (including development programs, NGOs, extension services and the private sector) at regional and country levels	Widespread use of tree-based climate-smart agriculture, leading to improved productivity (20%), livelihoods and agro-ecosystems health for 3 million people (including 50% women)

4.3.3. Strategic Area 3: Sustainable Value Chains for Tree Crops

ICRAF-WCA targets sustainable value chains for tree crops that support the livelihoods of millions of smallholder farmers in West and Central Africa. The value chains for tree crops include: Cocoa – *Theobroma cacao*, Cashew – *Anacardium occidentale*, Shea – *Vitellaria paradoxa*, Safou – *Dacryodes* edulis, Oil Palm – *Elaeis guineensis*, Bush Mango – *Irvingia spp*., Rubber – *Hevea brasiliensis*, Coffee – *Coffea arabica* and *Coffea robusta*, Gum Arabic – *Acacia senegal*, and Baobab – *Adansonia digitata*. Depending on local needs and emerging opportunities in specific countries, other tree crops may be added. We now describe the opportunities and challenges for selected tree crops

Cocoa (*Theobroma cacao*) is one of the most important agricultural products and sources of foreign currency in West and Central Africa. In West Africa, 6 million ha are planted with cocoa which account for about 70% of total world production. Côte d'Ivoire (1,741,000 tonnes) and Ghana (897,000 tonnes) are the largest producers, followed by Nigeria (250,000 tonnes) and Cameroon (210,000 tonnes). In these countries, yields are generally poor and increases in production have been achieved at the expense of forest lands (Quist-Wessel and Wessel, 2015). The major reasons for low yields include poor

quality of planting materials, ageing orchards, decreasing soil fertility, and devastating pests and diseases.

The production zones of **Cashew** (*Anacardium occidentale*) in West Africa are the most dynamic in the world, accounting for 45% of worldwide production in 2015 (Monteiro et al. 2017). The same trend can be observed in Central Africa. The shift to cashew cultivation could compromise sustainability of livelihoods and calls for more diversification through intercropping (Dendena et al. 2014; Adeigbe et al. 2015; Monteiro et al. 2017).

The **Shea tree** (*Vitellaria paradoxa*) thrives in 21 countries from West to East Africa. Key producers and exporters (350,000 tonnes) in West Africa include Benin, Burkina Faso, Côte d'Ivoire, Ghana, Guinea, Mali, Nigeria and Togo (Lovett 2005; Boffa 2015). The three main exporters of Shea butter are Mali (75,000 tonnes), Burkina Faso (70,000 tonnes) and Ghana (60,000 tonnes). Shea butter is used in cosmetics and chocolatery (Maranz and Wiesman 2004; Maranz et al. 2004). It is an important source of products and income, supporting the livelihoods of millions of people, but natural stands of this species are ageing.

Exported volumes of **Safou** (Dacryodes edulis) are still modest, but exports are increasing from Cameroon, Nigeria, Democratic Republic Congo and Central Africa Republic (Asaah 2012). The fruits of this species are an important source of food, income and employment for improvement of the livelihoods for farmers, transporters and traders (Schreckenberg et al. 2006). However, despite advances in the cultivation of Safou, production continues to involve collections from the wild, thus putting emphasis on more active cultivation and management of this important resource will be important.

The **oil palm** (Elaeis guineensis) originates from the rain forest of Africa with the main belt stretching from Cameroon, Côte d'Ivoire, Ghana, Liberia, Nigeria, Sierra Leone and Togo into Angola and Congo. Oil palm production in the region is still mostly rudimentary in the hands of smallholders and processing is still largely manual. African oil palm production accounts for a marginal portion of world production, while the major world producers from south-east Asia are grabbing lands in most of the West and Central Africa countries for this sector (Dyer et al. 2014; Hassan et al. 2016). Thus, the region has become a new frontier for large-scale palm oil production. Large commercial oil palm plantations with oil mills have been established and are currently operational in some West and Central Africa countries such as Côte d'Ivoire, Ghana, Nigeria and Cameroon. Knowledge gaps can be identified in crop yields, biodiversity and ecosystem services, supply chains and structures, policy and trade standards (Dyer et al. 2014).

Bush mango (Irvingia spp.,) is currently exploited in 21 countries in sub-Saharan Africa because of its commercial and nutritional importance. These features justify ICRAF's initiative in a two-decade research program on the biology and on-farm management of bush mango

1 Cocoa

2 Cashew

3 Shea nut

4 Safou

5 Oil palm

(Tchoundjeu and Atangana, 2007). This fruit plays a vital role as one of the main sources of incomes for inhabitants of the rural humid lowlands of West and Central Africa. However, production and commercialization are seriously constrained by several factors including lack of market information, availability of sizable volumes for market supply, high transportation costs and poor organization of marketing (Elah 2010).

Africa accounts for only 5% of global natural **rubber** (*Hevea brasiliensis)* production although most countries of West and Central Africa have considerable land areas under rubber tree plantations. Côte d'Ivoire, with production of 603 000 tonnes in 2017, accounts for 60% of Africa's rubber output and ranks seventh in global production. The country is followed by Nigeria, Liberia, Cameroon, Gabon, Ghana and the Democratic Republic of Congo, (Verheye 2010). Despite increase in production, revenue from natural rubber has been slashed by global oversupply. Therefore, diversifying products through intercropping with arable crops might be a very important system to ensure increase in farm revenues.

Côte d'Ivoire, with an annual production of 108,000 tonnes is West Africa's largest **coffee** (*Coffea spp*) producer, and the third largest in sub-Saharan Africa. Decrease in land availability and suitability associated with increasing demand of coffee and impacts of climate change potentially lead to more deforestation, thus the need for smarter coffee production systems (Killeen and Harper 2016).

Sudan is the leading producer of **Gum arabic** (*Acacia senegal*), supplying 80% of the international market. It is followed by Chad and Nigeria. These three countries together supply about 45,000 tons per year (Partos 2009). The demand for Gum arabic is growing while production is declining in leading countries. This opens new windows of opportunity for other producing countries like Burkina Faso, Cameroon, Mali, Mauritania, Senegal and Niger (Mujawamariya et al. 2013; SOS-Sahel 2014). Exploiting these opportunities will require that major constraints along the value chain be properly addressed. These constraints include: ageing trees, and over-exploited stands, lack of appropriate tools for efficient tree tapping and reliable transportation.

Baobab (*Adansonia digitata)* occurs in 33 African countries from the dry southern Sahara to the north of South Africa (Bouda 2014). Baobab tubers, twigs, fruits, seeds, leaves and flowers are commonly used as ingredients in traditional diets of rural and urban populations (Sidibe and Williams 2002; Assogbadjo et al. 2010; Bouda 2014). The pulp and oil from baobab seeds constitute the most valuable products for international markets for food and for the cosmetic industry (Herman 2009; Parkouda et al. 2012). Baobab tree crops generate incomes for millions of smallholder farmers, but unsustainable production practices and inefficient value chains are major constraints to full exploitation. The expansion of Baobab tree crop cultivation may also be subject to global land grabbing resulting in decreased access to land by local communities, exacerbated by unclear or weak land tenure policies.

Technologies and social innovations aimed at restoring productivity and increasing profitability of sustainable value chains for tree crops, recognizing gender roles and gender inequalities in the uptake of new practices are essential to ensure multiple

1 Bush mango

2 Rubber

3 Gum arabic

4 Baobab

5 Coffee

benefits of tree crop landscapes in WCA. This will be achieved by co-developing cost-effective methods, technologies, as well as guidelines and tools for decision-making which take into account gender differentiation. It will require strengthening of partnerships with relevant actors including national governments, other CGIAR institutions (e.g. IITA), advanced research institutions (e.g. CIRAD on coffee, oil palms, cashew) NARES, NGOs and the private sector, especially input suppliers, aggregators and processors.

Our approach will include development of smallholder tree crop enterprises and market linkages. A business approach to tree crop landscape restoration in the context of climate change and disease pressure will ensure sustainability and reduce rural poverty.

Table 5: Key Intervention Areas and Outcomes for Sustainable Value Chains for Tree Crops

Key Activities	Key Outcomes
Improve planting materials (pollen, seeds and seedlings) and develop cost-effective propagation techniques and delivery systems for high quality planting materials of tree crops and associated information, involving farmers, the public and the private sector	Improved high yielding planting materials for at least six tree crops are efficiently delivered and widely used by smallholders and private sector actors in at least five countries in WCA
Develop and scale out context-specific and socially and environmentally relevant tree crop-based agroforestry systems including tree crop management (pruning, fertilization, pest and disease management, post-harvest management) to match variability in sites and farmer circumstances and appraise effective institutional arrangements and policies needed to enhance adoption of these options	At least 2 million people in WCA practice context-specific and improved farming system options with adequate policy and institutional arrangements in place to facilitate uptake of improved technologies
Develop rural enterprises and youth entrepreneurship models and input and output market linkages around targeted tree crops and alternative income-generating value chains including harvest and post-harvest technology development	Model business plans and youth entrepreneurship models for tree crops developed and used for at least six priority tree crops to increase income for at least two million smallholder farmers including youths and women in WCA Individuals and groups linked with local and international markets with long-term engagement with the private sector

Key Activities	Key Outcomes
Develop household meal diversification options for tree crop commodities – fruit and leafy vegetable trees to enhance food security and resilience of local communities through participatory transdisciplinary research	Build the capacity of households to improve their food production, nutrition status, income and resilience of their communities
Develop guidelines on tree-crop management practices and approaches during production and storage stages for high market potential	Improved pest and diseases management options are developed that reduce losses, improve product quality and increase income of communities
Policy and institutional settings to support sustainable natural resource management and develop models to integrate tree-based commodities into green economies	Smallholders and private sector actors engaged in tree-based commodities adopt sustainable practices at the farm and landscape level The right policies and institutions are in place to enhance proper use of voluntary standards

4.4 Improved Communication of Research Outputs

Improving communication of research outputs is essential and extends beyond the dissemination of research findings. Communicating research outputs is *"Getting the right information to the right people in the right format at the right time" (*Morris et al. 2007*).* Effective communication implies taking into account (1) the audience we want to reach; (2) level of change and involvement we expect from them (ownership/engagement, understanding, acceptance, alignment, awareness and action) (3) highlights of concise and accessible messages we want to convey to each audience; and (4) types and most appropriate communications channels and tools tailored to specific audiences.

Our target audience will include policymakers, national government agencies, the private sector, donors and multilateral agencies, media organizations, beneficiaries and peer researchers. For each targeted audience, we will use a mix of traditional and new channels and tools of communication.

Communicating research outputs is an integral part of all our research-in-development programs throughout the entire process and takes into account the needs and interests of our target audiences. In this regard, we will focus on the following elements at national, regional and international levels through communication channels or adapted tools to reach our diversified audiences:

Increase publication of research and related stories on all ICRAF-WCA and partner platforms (website, social networks, etc.) through blogs, articles and success stories

Increase media outreach and develop strategic partnerships with key national, regional or international media outlets for the provision of source materials for accurate media reporting, coverage of major activities, interviews, production of documentaries, podcasts, videos/films or articles or press releases in (print media/ online, national or community, radio and TV)

Participate in major national, regional and international events (conferences, technical working groups, workshops, fairs, exhibitions and panel discussions) and strengthen public relations activities

Produce appropriate, accurately written, audiovisual or electronic communication materials (such as policy/technical briefs, brochures, leaflets, videos/ promotional films, publications on best practices, WCA resource booklets, reports, webinars and posters)

Build the capacity of scientists in communication by establishing partnerships with training organizations (e.g. **SciDev.net**)

5. Resources: Partners, Services, Human and Financial Resources

Our dynamic partnerships consist of permanent and long-term, and short-term more opportunistic and tactical partnerships. However, all forms of partnerships are based on comparative advantages and the potential to add value to our outcomes. Thus, partnerships will aim to optimize the impacts of our actions on landscape sustainability and improved livelihoods.

Partnerships: ICRAF-WCA will maintain strong partnership arrangements with

(i) **CGIAR Centres**;
(ii) **advanced research institutions;**
(iii) **national agricultural research and extension institutions;**
(iv) **international, regional and national meteorological institutions;**
(v) **institutions of higher education; (vi) farmer organizations;**
(vii) **community-based organizations (CBOs)**
(viii) **NGOs and (ix) the private sector (see Table 6).**

The primary objective of partnership arrangements is to identify research priorities in each country and collaboratively address common development problems. In these partnerships, ICRAF-WCA plans to valorize its key assets and expertise in agroforestry in the region. The Program will carefully identify and engage with partnerships to optimize value addition, minimize costs and maximize impact and returns on investments.

ICRAF-WCA will continue to develop strong partnerships with and leverage funding from the private sector (e.g. Mars, Unilever, Olvea, Cargill, Cemoi, Mali Biocarburant, and Coca-Cola) to address major challenges faced by farmers in the region. Opportunities exist for this form of partnership to develop new products in the food and cosmetic industry, and integrated systems research for important tree crops, notably cocoa, coffee, rubber, cashew and shea. A profile of ICRAF-WCA partners is presented in table 6.

Table 6 : List of ICRAF-WCA Strategic Partners

Strategic Areas	Strategic Partners
Overall	Ministries in charge of Research, Higher Education, Agriculture, Livestock, Forestry, Environment, CORAF/ WECARD, PRASAC, NARS
Landscapes Restoration	IUCN, CILSS
Climate Change Adaptation and Mitigation	AGRHYMET, Agrisoft, Meteorological organizations, WASCAL, ICRISAT
Sustainable Tree Crop Value Chains	Mars Inc. , Unilever, COMFAC, IITA, CIFOR , USAID
Capacity Development	WASCAL, CSRS, universities, NARES
Communication	CTA, local and international media
Development Institutions	ECOWAS, CEMAC, ROPPA

Services: ICRAF-WCA has developed a variety of research products, and approaches (RRC, CVC/CDC, Guidelines) as well as knowledge and technical expertise which are all key assets. The Regional Program will distribute these products by providing consultancy services to its partners.

Human Resources: To meet the goals of World Agroforestry, ICRAF-WCA will maintain a pool of highly experienced interdisciplinary staff to serve different purposes, including strategic thinking, project implementation and field data collection. Where competences are lacking, ICRAF-WCA will (1) recruit new staff with strategically important expertise in the following disciplines: agroforestry science, agricultural economics and landscape governance science, (2) negotiate with national partners (universities and research scientists) to second some of their best scientists to ICRAF; and (3) outsource expertise for research on specific issues.

ICRAF-WCA will offer Masters and PhD research training opportunities and attachments in collaboration with national universities. Furthermore, the Regional Program will ensure gender balance in its recruitment and staffing policy, in order to conform to ICRAF's corporate gender diversity, and inclusiveness policy.
For scientific staff, we plan to develop appropriate incentives and integrate performance indicators that take into account staff contributions to Intermediate Development Outcomes, rather than just scientific outputs.

Financing: ICRAF is a donor-funded organization. Over the years, core funds have averaged 5% of the operating budget. Realizing that financial resources are critical to meet the goals of this Strategic Plan, ICRAF-WCA will aggressively mobilize funding during the next nine years to achieve at least 5% annual growth. Additionally, the Program will develop strategies to attract more private sector funds over the life of this Strategic Plan and will also partner with NARS to access bilateral funds. Other strategies will include setting aside resources to serve as flexible co-funding and investing in building the capacity of staff in the region to generate additional financial resources, in as far as ICRAF's corporate policies permit.

While continuing to respond to calls for competitive grants, ICRAF-WCA will increase its proactive engagement with regional and bilateral donors, interested in particular thematic areas, in order to directly negotiate project funding based on goals and conventions. The ICRAF-WCA Regional Director, in collaboration with sub-unit representatives, will liaise with the grant office and researchers in the region, depending on their expertise, to develop proposals for new research-in-development projects.

Figure 11 : Staff transporting banana vitro plants used as cocoa companion trees.

6. Financial Resources

ICRAF-WCA's revenue is derived from core through redistribution of 5% overheads from projects, 92% from bilateral projects and 3% from CGIAR-CRPs. ICRAF-WCA is involved in the following four out of 12 CRPs: (i) Climate Change, Agriculture and Food Security (CCAFS), (ii) Forests, Trees and Agroforestry (FTA), (iii) Water Land and Ecosystems (WLE), and (iv) Grain Legumes and Dryland Cereals (GLDC).

Of the three funding sources, the major part of the ICRAF-WCA regional budget is derived from bilateral projects. Therefore, our efforts will focus on sourcing funds from

bilateral projects through appropriate partnerships, including the private sector, to maintain our ambitious 10% annual growth rate from the current USD 17.30 million in 2018 to about 37 million by 2026.

To achieve this projection, strategic small grants, consultancies and funds will be aggressively sourced through country funding windows. Additional effort will be put into raising funds from bilateral donors to maintain the ratio 60/40 for field work/personnel and office expenditures. Based on our planned activities in this Strategic Plan, we have projected a 6-year ICRAF-WCA financing scenario presented in Table 7

Table 7 ICRAF-WCA Financial Projection 2018-2023

Type	Actual 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022	Projected 2023
Total staff costs	4,641,456.36	5,105,601.99	5,616,162,19	6,177,778.41	6,795,556.25	7,475,111.88
Hypo-thetical operating budget	6,962,184.54	7,658,402.99	8,424,234.29	9,226,667.62	10,193,334.38	11,212,667.82
Total hy-pothetical budget	11,603,640.90	12,764,004.98	14,040,405.48	15,444,446.03	16,988,890.63	18,687,779.70
Partner budget	7,125,037.13	7,125,037.13	7,125,037.13	7,125,037.13	7,125,037.13	7,125,037.13
Overall Budget	**18,728,678.03**	**19,889,042.11**	**21,165,442.61**	**22,569,483.16**	**24,113,927.76**	**25,812,816.83**

ICRAF-WCA at 10 per cent growth rate in US Dollars

7. Risks, Risks Management and Business Continuity

Political Risks and Insecurity: Most ICRAF-WCA countries currently face socio-political instability which often leads to violence and insecurity. The organization has survived these turbulent periods and conditions, and will continue to develop methods to maintain its presence wherever feasible, without compromising the security of staff, physical infrastructure and assets.

Currency Exchange Rates Fluctuation: ICRAF operates in United States Dollars (USD), and often implements projects funded in other currencies. Exchange rate fluctuations sometimes result in shortfalls of available funds for project implementation. ICRAF finance systems allow for real-time monitoring of income and expenditures to minimize risks of overspending in cases of unfavourable currency exchange rates.

Competitors: ICRAF faces serious competition from emerging institutions in the same field. However, the organization strives to maintain the research-in-development paradigmas an indispensable strategy in the agroforestry research and development domains by raising its visibility and ensuring timely delivery of quality results and products.

Scientific Risks: Declining funds for fundamental research is limiting our capacity to generate solutions for issues that may become critical challenges in the years ahead. Limited core funds also constitute a major constraint for long-term observatory experiments, since agroforestry is a long-term activity. Thus, our capacities as well as long-term perspectives are seriously undermined. Bundling funding sources, co-locating research activities, and strengthening liaison with universities for basic science research and development of technologies will help to address issues related to declining funds for research and the need for long-term effective monitoring of our activities.

Capacity Risks: ICRAF-WCA may lose experienced and competent scientists and enablers because contracts are tied to projects. Such staff are compelled to leave the organization when projects come to an end and no alternative funds are available. ICRAF-WCA will double its efforts to develop new projects or constitute back-up or seed funding to maintain strategic research positions.

Communication Risk: ICRAF is well known as a Centre of Scientific Excellence and seldom sells itself as an organization that conducts multi-disciplinary research with tangible results that impact on people's livelihoods. In the next nine years, ICRAF-WCA will put emphasis on this concept in order to attract new funding and retain highly qualified staff. Additionally, the organization will embark on recruitment of specialists in communication to better project its image and sell its products.

8. Monitoring and Evaluation

Implementation of the current ICRAF-WCA Strategic Plan will be evaluated after five years to identify what works and what requires remedial action. The second evaluation will be conducted at the end of the nine-year period. The principal evaluation indicators will include (but not limited to):

i) **number of projects executed**,
ii) **volume of funds raised**,
iii) **staff evolution rate**,
iv) **number of people in WCA lifted out of poverty**,
v) **number of people in WCA enjoying improved diets**,
vi) **degraded land area restored**,
vii) **number of policy and institutional changes**, and
viii) **access to resources**.

The transformative outcomes (causing significant changes and irreversible in bringing the key stakeholders on development trajectory in line with our objectives) defined in this CORAF-WCA Strategic Plan align with the main objectives, goals and science quality principles (legitimacy, salience and credibility) of ICRAF.
Besides specific M&E for each project and program in this Strategic Plan, ICRAF-WCA will develop an M&E framework that will be used to assess progress towards achieving the outcomes and impacts defined in this Strategic Plan and its contribution to ICRAF Corporate Strategy targets in line with those of the SLOs of the CGIAR's SRF system.

9. References

Adeigbe O.O., Olasupo F.O., Adewale B.D., Muyiwa A.A. 2015. A review on cashew research and production in Nigeria in the last four decades *Sci. Res. Essays* 10: 196-209.

Alkire S., Robles G. 2017. 'Multidimensional Poverty Index – Summer 2017: brief methodological note and results. *OPHI MPI Methodological Notes 44, Oxford Poverty and Human Development Initiative.* 20 p.

Asaah E.K., Tchoundjeu Z., Van Damme P. 2012. Beyond propagation of indigenous fruit trees: case of *Dacryodes edulis* (G. Don) H.J. Lam and *Allanblackia floribunda* Oliv. *Africa Focus* 25:61-72.

Assogbadjo A.E., Glegle Kaka R., Edon S., Kyndt T., Sinsin B. 2010. Natural variation in fruit characteristics, seed germination and seedling growth of *Adansonia digitata* L. in Benin*. New Forest* 41: 113-125*.*

Bayala J., Zougmoré R., Dayamba S.D., Olivier A. 2017. Climate-Smart Agriculture Technologies in West Africa: learning from the ground Research for Development experiences. *Agriculture & Food Security* 6: 40*. DOI 10.1186/s40066-017-0117-5.*

Boffa J-M. 2015. Opportunities and challenges in the improvement of the shea *(Vitellaria paradoxa)* resource and its management. *Occasional Paper 24. Nairobi: World Agroforestry Centre.* 76 p.

Bouda Z.H.N. 2014. Adaptive properties of *Adansonia digitata* L. (Baobab) and *Parkia biglobosa* (Jacq.) R.Br. (African Locust Bean) to drought stress. IGN *PhD Thesis.*
Department of Geosciences of Copenhagen, Frederiksberg. 58 p.

Coe R., Sinclair F., Barrios E. 2014. Scaling up agroforestry requires research "in" rather than "for" development. *Current Opinion in Environmental Sustainability 6, 73-77.*

Dayamba S.D., Ky-Dembele C., Bayala J., Dorward P., Sanogo D., Diop M.L., Traoré I., Diakité A., Graham C., Nenkam A., Binam N.J., Ouedraogo M., Zougmore R.B. 2018. Assessment of the use of participatory integrated climate services for agriculture (PICSA) approach by farmers to manage climate risk in Mali and Senegal. *Climates Services (2018), https://doi.org/10.1016/j.cliser.2018.07.003.*

Degrande A., Franzel S., Yeptiet Y., Asaah E., Tsobeng A., Tchoundjeu Z. 2012. Effectiveness of grassroots organizations in the dissemination of agroforestry innovations. In Kaonga M. (Ed.) Agroforestry for Biodiversity and Ecosystem Services - Science and Practice. InTech, Rijeka, Croatia. *http://www.uco.es/zootecniaygestion/img/pictorex/29_16_16_Agroforestry.pdf#page=153*
Degrande A., Siohdjie Yeptiep Y., Franzel S., Asaah E., Takoutsing B., Tsobeng A., Tchoundjeu Z. 2014. Disseminating agroforestry innovations in Cameroon: Are relay
organizations effective? In: Van Lauwe B., Van Asten P., Blomme G. (Eds) *Agro-ecological Intensification of Agricultural Systems in the African Highlands, Routledge,* New York, USA, pp 221-230.

Dendena B. Corsi S. 2014. Cashew, from seed to market: A review. *Agron. Sustain. Dev.* 34: 743-772.

Diby L., Kouassi G., Nguessan M.P., Oro F., Kouame C., Aynekulu E., Shepherd K. 2016. Cocoa Land Health Surveillance: an evidence-based approach to sustainable managements. *Technical Brief Series 3. ICRAF.*

Dinesh D., Campbell B., Bonilla-Findji O., Richards M. 2017. 10 best bet innovations for adaptation in agriculture: A supplement to the UNFCCC NAP Technical Guidelines. CCAFS Working Paper no. 215. Wageningen, The Netherlands: CGIAR Research
Program on Climate Change, Agriculture and Food Security (CCAFS). *Available online at: www.ccafs.cgiar.org*

Dorward P., Clarkson G., Stern R. 2015. Participatory Integrated Climate Services for Agriculture (PICSA): Field Manual. *Walker Institute, University of Reading, UK*. 65 p.

Dyer J. Tallontine A., Ziv G. 2014. The future of palm oil in West and Central Africa: workshop Report. *SRI Briefing Note Series No. 3.*
Elah E.M. 2010. Markets and market chain analysis for bush mango in the South-West and East regions of Cameroon. *MSc Thesis, University of Buea, Cameroon*. 9 p.

Hassan M.A., Njeshu G., Raji A., Zhengwuvi L. Salisu J. 2016. Small-scale palm oil processing in West and Central Africa: Development and challenges. *Journal of Aplied Sciences and Environmental Sustainability* 2 (5): 102-114.

Herman M. 2009. The impact of the European Novel Food Regulation on trade and food innovation based on traditional plant foods from developing countries.
Food Policy 34: 499-507.

ICRAF. 2017. Corporate strategy 2017-2026: Transforming lives and landscapes with trees. *World Agroforestry Centre, Nairobi, Kenya*. 35 pp

Kahia J., Kone S., Ngoran G., Kouame C. 2016. Rapid multiplication of elite cocoa clones using somatic embryogenesis. *Technical Brief Series 2. ICRAF.*

Kalinganire A., Weber J.C., Uwamariya A., Kone B. 2008. Improving rural livelihoods through domestication of indigenous fruit trees in the parklands of the Sahel.
In: Akinnifesi F.K., Leakey R.R.B., Ajayi O.C., Sileshi G., Tchoundjeu Z., Matakala P., Kwesiga F. (eds) Indigenous fruit trees in the tropics: domestication, utilization and
commercialization. *CABI, Oxfordshire,* pp 186-203.

Kouakou T., Kingoun C.S., Diomande S., Golli S., Kouame G.A., Sylla N.S., Yekoi B., Kouame C. 2016. Cocoa Village Centres: delivering higher productivity. *Technical Brief Series 4. ICRAF.*
Kouame C., Bene Y., Toure E., Berthe B., Allegra Kouassi, A., Diomande S.,
Tchoundjeu Z. 2016. Restoring Cote d'Ivoire cocoa orchards. *Technical Brief Series 1. ICRAF.*

Kouame C., Diby L., Kahia J., Yeboi B., Bredou G., Kouassi A., Tchoundjeu Z., Prabhu R. 2016.Vision for change: A public private partnership for sustainable cocoa production. *Policy Brief #33. ICRAF.*

Leakey R.R.B., Schreckenberg K., Tchoundjeu Z. 2003. The participatory domestication of West African indigenous fruits. *International Forestry Review* 5 (3): 338-347.

Lovett P.N. 2005. Shea butter industry expanding in West Africa.
Inform 16 (5): 273-275.

Maranz S., Wiesman Z. 2004. Influence of climate on the tocopherol content of shea butter. *J Agric Food Chem.* 52(10):2934-7.
Maranz S., Wiesman Z., Bisgaard J. and G. Bianchi. 2004. Germplasm resources of *Vitellaria paradoxa* based on variations in fat composition across the species
distribution range. *Agroforestry Systems* 60: 71-76.

Monteiro F., Catarino L., Batista D., Indjai B., Duarte M.C., Romeiras M.M. 2017. Cashew as a high agricultural commodity in West Africa: *Insights towards sustainable production in Guinea-Bissau. Sustainability ,* 9: 1666*; doi:10.3390/su9091666.*

Mujawamariya G., Madi P.O., Zoubeirpu A.M., Sene A., Maisharou A. D'Hasse M. 2013. Common challenges in gum Arabic production and commercialization in West Africa: a comparative study of Cameroon, Niger and Senegal*. International Forestry Review 15(2), 2014.*

Parkouda C., Sanou H., Tougiani A., Korbo A., Nielsen D.S., Tano-Debrah K., Ræbild A. Diawara B., Jesen J.S. 2012. Variability of Baobab (Adansonia digitata L.) fruits' physical characteristics and nutrient content in the West African Sahel. *Agroforestry Systems* 85: 455-463.

Partos L. 2009. Sudan scraps gum Arabic monopoly to liberalize market.
Foodnavigator.com.

Quist-Wessel F.P. M., Wessel M. 2015. Cocoa production in West Africa, a review and analysis of recent developments. NJAS – *Wageningen Journal of Life Sciences*
74-75:1-7.

Ræbild A., Larsen A.S., Jensen J.S., Ouedraogo M., De Groote S., Van Damme P., Bayala J., Diallo B.O., Sanou H., Kalinganire A., Kjaer E.D. 2011. *Advances in domestication of indigenous fruit trees in the West African Sahel in New Forests* 41: 297-315.
Schreckenberg K., Awono A., Dgrande A., Mbosso C., Ndoye O., Tchoundjeu A. 2006. Domesticating indigenous fruit trees as a contribution to poverty reduction. *Forests, Trees and Livelihoods* 16:35-51.

Sidibe M., Williams JT. 2002. Baobab. *Adansonia digitata*. Eds: Hugues A., Haq N., Smith R. W., *International Centre for Underutilized Crops, Southampton, UK.* 102 p.

SOS-Sahel 2014. Promoting the potential of gum arabic to contribute to food security and nutrition in drylands. SOS-Sahel. 32 p.

Tchoundjeu Z., Asaah E.K., Anegbeh P., Degrande A., Mbile P., Facheux C., Tsobeng A., Atangana A.R., Ngo-Mpeck M.L., Simons A.J. 2006. Putting participatory domestication into practice in West and Central Africa. Forests, *Trees and Livelihoods,* 16 (1): 53-69*, DOI: 10.1080/14728028.2006.9752545.*

Tchoundjeu Z., Atangana A.R. 2007. Irvingia gabonensis (Aubry-Leconte ex O'Rorke) baill. In: van der Vossen H.A.M., Mkamilo G.S. (Eds) PROTA, Wageningen, Netherlands.

Tchoundjeu Z., Degrande A., Leakey R.R.B., Nimino G., Kemajou E., Asaah E., Facheux C., Mbile P., Mbosso C., Sado T., Tsobeng A. 2010. Impacts of participatory tree domestication on farmer livelihoods in West and Central Africa. *Forests Trees and Livelihoods* 19(3): 217-234. *DOI: 10.1080/14728028.2010.9752668.*

Verheye W. 2010. Growth and production of rubber. In Verheye E. (ed.) Land use, land cover and soil sciences. Encyclopedia of life support systems (EOLSS0, UNESCO-EOLSS Publishers, Oxford, UK. 21 p.

Worldometers 2018. Accessible at http://www.worldometers.info/world-population/
ICRAF Business Model, Better Connecting impactful outcomes in agroforestry with sustainable outcomes at ICRAF, version 1.2 November 2018, 34 p.

UNCCD (United Nations Convention to Combat Desertification)1994, 56 p.

UNCCD (United Nations Convention to Combat Desertification) 2016. Securing life on land, 9 p.

Timothy J. Killeen, PHD and Grady Harper 2016, COFFEE IN THE 21st CENTURY: will climate change and increased demand lead to new deforestation? (Conservation international)- April 14, 2016, 38 p.

Morris et al. 2007, Communicating Research Findings p14

Figure 12 : Diversified products from agroforestry systems in Brazil.

ICRAF West and Central Africa office

Yaoundé, Cameroun : +237 222 215 084

Bamako, Mali : +223 2070 9200

Abidjan, Côte d'Ivoire : +225 2250 4839

www.worldagroforestry.org

ICRAF-WEST & Central Africa Region

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