



WWF

REPORT

ZW

2017

AFRICA FOOD

TRANSFORMATIONAL PROJECT



AGRICULTURAL DEVELOPMENT - NATURAL CAPITAL NEXUS





REPORT

ZW

2017

AFRICA FOOD

TRANSFORMATIONAL PROJECT:

AGRICULTURAL DEVELOPMENT
- NATURAL CAPITAL NEXUS

Published July 2017 by WWF-World Wide Fund For Nature
(formerly World Wildlife Fund) Harare, Zimbabwe. Any
reproduction in full or in part of this publication must
mention the title and credit the publisher as the copyright
owner.

© Text: WWF All rights reserved
Designed & printed by Sable Press (Pvt) Ltd
Cover image: E. Gumiremhete

© 1986 Panda symbol WWF-World Wide Fund For Nature
(formerly World Wildlife Fund)

“WWF” and Living Planet are WWF Registered Trademarks
07.08(6k)

Contents

Acronyms	4
Acknowledgements	5
Foreword	6
Introduction	7
Challenges and Opportunities	10
The Project's Theory of Change	17
The Bankable Projects	21
The Budget	35
References	40

Acronyms

AfDB	African Development Bank
CARE	CARE International
CIAT	International Centre for Tropical Agriculture
FAO	Food and Agricultural Organization
ICRAF	World Agroforestry Centre
KAZA TFCA	Kavango Zambezi Trans-frontier Conservation Area
PIDA	Programme for Infrastructure Development in Africa
SAGOT	Southern Agricultural Growth Corridor of Tanzania

Acknowledgements

We wish to express our heartfelt appreciation to all who contributed to the development of this Africa Food Transformation Project document. They include CARE, CIAT, ICRAF, AfDB and FAO who actively participated in various brainstorming sessions and in a bankable projects co-design workshop. WWF Network colleagues from within and outside Africa contributed in various ways to ensure that a good and compelling product is produced.

Foreword

The ability of Africa to feed itself and parts of the world on a sustained basis remains one of the greatest challenges of our time!

Climate change, population growth, urbanization, changing food preferences and increasing demand for agricultural products are pushing Africa's agricultural frontiers and putting increased pressure on the continent's natural capital. Agricultural production is expanding through extensification and intensification, and investments in agro-industries. If not well planned and managed, such developments have the potential to negatively impact on important ecosystems; reduce food systems' resilience to climate change; and increase the cost of food production in the long term.

We recognize that Africa has millions of smallholder farmers and pastoralists who not only deal with low productivity, poor soils, low inputs and minimal access to technology, but also few entry points to food value chains. Food value chains affect the continent's food and natural capital systems in two main ways. First, they help to improve the quality and diversity of products from smallholder farmers and create access to different markets and thus increase monetary gains, improve diet and nutrition, and enhance food productivity while recognizing the importance of ecosystems services. Second, consumers in many parts of the world, especially Europe and North America, are increasingly asking for commercial agricultural products such as palm oil, soyabeans, cocoa and sugar that are produced in more sustainable ways.

The goal of the Africa Food Transformational project is to promote land-based sustainable food systems that conserve natural capital and provide benefits to household food and nutrition security. Our belief is that through a collaborative approach of multiple stakeholders involved in land-based food chains and natural capital conservation, we can influence investment decisions, policies, governance systems, technologies and practices towards sustainability and increased resilience on the African continent and beyond. We are therefore excited that CIAT, CARE, ICRAF, AfDB and FAO joined with us in co-designing four bankable projects that form the bedrock of this initiative. The bankable projects revolve around:

- a. Multi-stakeholder engagement on scenario planning to model sustainable agricultural development trajectories;
- b. Knowledge generation and management systems on climate and conservation smart agriculture in smallholder farming;
- c. Sustainable value chains for priority commodities (e.g. palm oil, sugar, cocoa, cotton, tea, coffee); and,
- d. Socio-economic development and natural capital trade-offs in agricultural investment corridors.

Given the complexity and scale of this task, we look forward to broadening our partnerships as we embark on a journey of resourcing for and implementing the four bankable projects across large landscapes of Africa.



Frederick Kumah
DIRECTOR, WWF REGIONAL OFFICE
FOR AFRICA



Enos Shumba
COUNTRY DIRECTOR, WWF
ZIMBABWE



INTRODUCTION

Together
Possible



Agriculture is the mainstay of most African economies (accounting for about 32% of the GDP-AGRA, 2013); and is a source of livelihood for the majority of the continent's population of 1.2 billion people, 70% of which is rural, largely poor and dependent on agriculture and natural assets (e.g. wildlife and forests) for survival.



The bulk of smallholder farming depends on animal and human power.

Remarkably around 70% of the continent's food is produced by subsistence smallholder farmers, the majority of whom are female and operate on small plots (IAASTD, 2009). Africa's large-scale commercial farmers achieve higher levels of agricultural productivity targeted at both domestic and external markets. With over 25% of the world's arable land and only 10% of global agricultural output, the continent presents one of the last frontiers for large-scale agricultural development and transformation (Jayaram, *et al*, 2010) with potential to feed a significant proportion of the world's population estimated

at 11.2 billion by 2100. Notwithstanding, Africa's food and nutrition security situation has remained a challenge due to both internal and external food demand increases that are compounded by changes in food preferences.

At less than a third of its ecological potential, agricultural productivity in Africa is still low. Consequently, the bulk of the consumed food comes from both agricultural expansion and intensification. This negatively impacts on the continent's natural capital and ability to feed itself as the habitat shrinks, fragments and degrades. Data from several African countries shows a strong negative correlation between agricultural expansion and the loss of critical natural assets such as forests, woodlands and wildlife habitats due to cropping and pastures for livestock production (*Deweese, et al, 2011*). The trend is likely to worsen with climate change as drought and flood induced agricultural failures will contribute to the opening up of more agricultural land, especially by smallholder farmers as a risk management strategy. In addition, loss of natural capital reduces the resilience of African agricultural systems (both crop and livestock) to climate change and increases the cost of food production. Consequently, poorly managed agricultural transformation can negatively impact on ecosystems services and result in a natural asset depleted Africa unable to feed itself in the future.

Ecosystem services are categorized in four ways- provisioning, e.g. production of food and water; regulating, e.g. control of climate and disease; supporting, e.g. nutrient cycles and crop pollination; and cultural, e.g. spiritual and recreational benefits- all necessary and important safeguards for healthy and sustainable lifestyles. In addition, Africa's natural capital attracts millions of tourists each year, generating revenue and creating jobs. The Africa's Ecological Futures report showed that the continent's natural capital will be influenced by economic development decisions made today and in the future around areas such as agricultural transformation (*WWF & AfDB, 2015*).

The foregoing realities motivated the development of this Africa Food Transformational project which is in line with WWF's Global Practice on Food.



CHALLENGES AND OPPORTUNITIES

Together
Possible



Africa's agricultural productivity is low- it could be considered the last remaining continent where optimization of the agricultural sector remains possible.

This generates debate on whether a sustainable “green revolution” is possible on a continent richly blessed with natural resources, likely to suffer enormously from climate change impacts and where the diversity of ecosystems, flora and fauna is a huge asset. The continent should therefore aim to develop and promote more productive and less wasteful, climate change resilient and sustainable agricultural systems that are within its ecological limits. Best practices for sustainable agricultural productivity exist although their focus has largely been on agricultural production and not on landscape level natural habitat conservation or on market factors that influence sustainable production and demand patterns.



Land clearing for crop production

The challenges

Major challenges to sustainable food production and natural capital preservation in Africa include: low input and natural capital intensive production systems; disempowering land tenure systems; low economic value placed on natural capital; and post harvest losses. They are elaborated in this section.

a. Low input and natural capital intensive production systems

The bulk of Africa is characterized by low and erratic rainfall; chronic low soil fertility, and low and variable agricultural production and productivity. Other challenges include

lack of coherent and conducive policies; poor access to input and output markets; low levels of mechanization; overreliance on rain fed agriculture; limited value addition at source; and climate change. In the case of starch staples (viz. maize, small grain cereals and root crops), the use of inorganic fertilizer, improved crop varieties and irrigation is low; risks of crop failure are high; and yields are around 30% of their potential. This has forced smallholder farmers to increase the area planted to food crops as an insurance against total crop failure. The advent of climate change has worsened the situation as Africa's seasons are shifting, rainfall is becoming less reliable, temperatures are rising, weather is becoming more extreme, and the fight against hunger is becoming much harder (*Oxfam, 2015*). In addition, land and water resources are becoming more stressed than in the past due to soil degradation, salinization of irrigated areas and competition from uses other than food production.

b. Disempowering land tenure systems

Most of Africa's forests and woodlands fall within the public domain i.e. open land tenure systems (viz. state & communal land) hence they are considered public goods whose benefits are sometimes difficult to internalize at the household level (a likely disincentive to sustainable natural resources management and investment). It is therefore critical that forest dependent communities are capacitated to sustainably manage their farming systems as landscapes and to understand the trade-offs between sustainable farming practices and unplanned landscape transformation. However, existing governance, institutional and incentive systems on the management of common property resources in most African countries are generally weak, although exceptions from which we can learn do exist. In addition, evidence exists that well managed communal land tenure systems can be sustainable.

c. Low economic value placed on natural capital

Nature is the basis for thriving societies hence the valuing of non-market natural capital is something that needs to be taken into account during the search for growth and development. The bulk of Africa's forests and woodlands (natural assets) contribute to local livelihoods (e.g. food, medicine, shelter, non-timber forest products and energy); act as social safety nets; and have cultural and aesthetic values. However, they are generally considered as a medium for development and not a source of development as they hold little merchantable timber based on existing technologies. This has given rise to a notion that the continent has vast tracks of open land available for agricultural expansion without acknowledging local use and the existence of ecologically sensitive areas such as wetlands and protected areas that provide important biodiversity habitats and ecological functions. The appetite to convert Africa's forests and woodlands into high value economic ventures such as agriculture, infrastructural development and extractive industries is therefore high. This contributes to the marginalization and displacement of local people, biodiversity loss, forest and woodland depletion, loss of ecosystems services, landscape fragmentation and disruption of traditional wildlife migratory routes.

d. High post harvest losses

About 33% of food produced in Africa is lost after harvest, either on-farm and/or off-farm. On-farm losses are mostly due to poor handling, inappropriate storage facilities, and pest and disease damage; while off-farm losses can be attributed to deficiencies in

transportation, storage infrastructure and processing. The value of post harvest food loss along the value chain in Sub Saharan Africa equates to the annual value of its cereal imports (*World Bank, 2011*). Consequently, investing in post harvest loss reduction can be a quick impact intervention to enhance food security, alleviate poverty and improve nutrition (*GIZ, 2013*). It can also reduce environmental impacts of the global food system and increase food availability without expanding agricultural production. Food loss reduction is therefore a huge opportunity to produce more food with less land, water, energy and GHG emissions. Case 1 uses tomatoes, an important and highly perishable commodity, to demonstrate the impact of food loss on the African continent.

Case 1: Africa's tomatoes and their value chain

Africa's tomatoes are produced under partial and/or complete irrigation mostly by smallholder farmers individually or under contract by large companies. The crop's major production challenges are water scarcity, pest and disease attacks and the use of inappropriate technology. In 2012 the continent produced 19.9 million tons of tomatoes, constituting 11.1% of global output. Notwithstanding, Africa remains a net importer of the commodity. For example Nigeria, the 14th largest world tomato producer, loses 50% of its production post harvest and spends \$500 million to import tomatoes annually. Losses mostly occur during harvesting, processing, packaging, transportation, marketing and consumption depending on the final product and market (local, national, regional and international).

The need to determine desired food loss management scenarios and trajectories that catalyze action towards food systems' sustainability can therefore not be overemphasized.



Vendors with tomato stalls along a busy street.

The opportunities

Sustainable Development Goals and commodity value chains present interesting opportunities for balancing agricultural production and natural capital as highlighted in this section.

a. Adoption of Sustainable Development Goals

The Sustainable Development Goals (SDGs 2015-2030) adopted by the 193 UN Member States in New York in 2015 laid a foundation for a new global development agenda in which Member States endorsed 17 goals that address areas of critical importance to humanity and the planet. The following goals are directly relevant to this Africa Food Transformational Project:

- a. Goal 2: End hunger, achieve food security and improve nutrition, and promote sustainable agriculture;
- b. Goal 6: Ensure availability and sustainable management of water and sanitation for all;
- c. Goal 13: Take urgent action to combat climate change and its impacts; and,
- d. Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss.

b. Strengthening of Commodity value chains

Agricultural commodities produced on the continent and of interest to the Africa Food Transformational Project can be grouped into those mainly for food; those for both food and cash; and those mostly for cash. It is however worth noting that commodities such as maize and cassava, which are mostly grown for subsistence under smallholder agriculture, are cash crops under commercial farming. Table 1 highlights the types of markets (viz. international, retail and unregulated) that are available for various commodities. International market players commit themselves to selling sustainably produced commodities and are held accountable by consumers in recipient markets or by international undertakings they are party to (e.g. Paris Agreement on Climate Action). Certification, traceability and other best management practices can be used as a market tool to demonstrate that a commodity has been produced in a sustainable manner as highlighted in the case of Palm oil (Case 2).

Some retailers, as good corporate citizens, commit to selling sustainably produced commodities to consumers that might not be environmentally conscious while their competition does not reciprocate. However such an arrangement is not sustainable as it depends on good will. With respect to unregulated local markets (which are widespread on the continent), national governments can institute and enforce laws on good environmental stewardship to achieve sustainability in food production systems.

Case 2: Palm oil production in Africa

With global production reaching 42 million tons (Index Mundi, 2016) and global demand increasing, Africa has become the new frontier of industrial palm oil production. Given that the continent currently accounts for about 5% of the global palm oil production, some 2 million ha of land in west and central Africa could be converted to palm plantations over the next five years. The crop is largely grown by smallholder farmers as a food and cash crop. Unfortunately its productivity is still very low (low inputs, no clear policies/strategies, low technical and financial capacities) and focus has been on agricultural extensification to meet growing demand resulting in deforestation and land degradation. Consequently, certification and traceability have been used as a tool to encourage good husbandry practices for the crop destined for international export. In this regard, Olam was the first in Africa to achieve Roundtable on Sustainable Palm Oil (RSPO) certification for new palm oil plantation development. Olam's core purpose is to ensure profitable growth in an ethical, socially responsible and environmentally sustainable manner across all product platforms and businesses for which it was recognized in Fortune's 2016 Top 50 Change the World list.




A palm oil plantation in production.

Table 1: Relationship between commodities and market types

Commodity type/use	Market		
	International players (examples)	Retailers (examples)	Unregulated local markets
Mainly food: e.g. sorghum, millets, maize, cassava	None	Several & varied	Several & varied
Both food and cash: e.g. maize, barley, beans, palm oil, cassava, dairy, livestock, rice, bananas, fruits & vegetables	Nestle, AB InBev/SAB Miller, Unilever, Coca Cola, Monsanto, Kellogg's, Mondelez, MARS, PepsiCo, Walmart, Togaat Hullett, Olam	Whole Foods Market	Many & varied
Mostly cash: cocoa, coffee, cotton, cashew, tea, tobacco, sugarcane	MARS, CARGILL, Uniliver, Mondelez, Nestle, Swift Silliker, Coca Cola, CommCare, Rabobank, Illovo, Colgate Palmolive, Togaat Hullett, Starbucks	Whole Foods Market, Costco Wholesale, Intersnarks & Kraft Foods, Sunshine nut co., Balley Callebaut, Theo Chocolate, Starbucks	None

It is worth noting that commodities that are mostly produced for food (subsistence agriculture) generally have a lower natural capital footprint than those largely produced for cash. The latter usually require large tracts of land to satisfy market demand. On the other hand the challenge with subsistence agriculture is that of many smallholder farmers opening small pieces of land for food and nutrition security. Notwithstanding, the type of technology used ultimately affects a commodity's footprint.

The foregoing challenges and opportunities influenced the architecture and content of the Africa Food Transformational project.



THE PROJECT'S THEORY OF CHANGE



The goal of the Africa Food Transformational Project is to achieve land- based food systems that are sustainable, conserve natural systems and contribute to global food and nutrition security.

The following should obtain in order to achieve this:

- a. Agricultural practices must provide for the needs of present and future generations;
- b. Agricultural landscapes must be sustainable and resilient– for nature (ecosystems and ecosystem services) and people and,
- c. Agriculture must be part of and support inclusive sustainable development that enhances livelihoods, reduces poverty and benefits women, men and youth.



A new thinking is required in order to balance agriculture and natural capital.

The Transformational Project's overarching strategy is to: promote the development and adoption of relevant knowledge sharing approaches, appropriate technologies and enabling policies; build and capacitate local level institutions to balance the need to produce more food while maintaining natural capital; support the implementation of integrated land use planning; and promote trans-boundary collaboration, peer learning and knowledge management for impact at scale. In addition, governments, investment institutions, business and communities must create a shared understanding of the important links between food systems and the erosion of natural assets, with related impacts on quality of life as well as the risks to sustainability and resilience (e.g. the food, water and energy nexus). This information sharing must go further- and provide space for dialogue among those engaged along the food chain so that input availability can improve, technology can be shared, impacts can be appreciated, and actions can be altered as appropriate.

Desired Change

Our desired change is that Africans in target landscapes adopt food production systems that balance agricultural development and natural capital (ecosystems functions). We believe that this change can be realized by fulfilling the following four outcomes:

- a. Multi-stakeholder engagement on scenario planning for sustainable agricultural development facilitated: Africa's agricultural sector is complex and multi faceted. Planning for its future therefore requires the participation of multiple stakeholders and interest groups to share their perspectives and explore possible sustainable agricultural development trajectories;
- b. Knowledge management and information systems on climate and conservation smart agriculture for smallholder farming in place: Africa's agricultural sector can learn from experiences elsewhere as well as from its own. The establishment of appropriate mechanisms for generating, managing and sharing best practices and lessons on climate and conservation smart agriculture is therefore critical;
- c. Sustainable value chains for priority commodities supported: Consumers in many parts of the world are increasingly asking for cash crops such as palm oil, soya beans and sugar that are produced in more sustainable ways. Ensuring sustainable production of such commodities therefore ensures greater economic opportunities and ecosystems benefits in the long term; and,
- d. Socio-economic development and natural capital trade-offs in agricultural investment corridors facilitated: Agricultural expansion has consequences that impede other uses and benefits of land, water and other natural resources. It is only through the appropriate planning and balancing of such uses that optimal benefits can be realized. This is particularly true for large scale agricultural expansion plans within agricultural corridors.

Figure 1 depicts the four outcomes. The outcomes formed the basis for developing the four bankable projects elaborated in the next section.

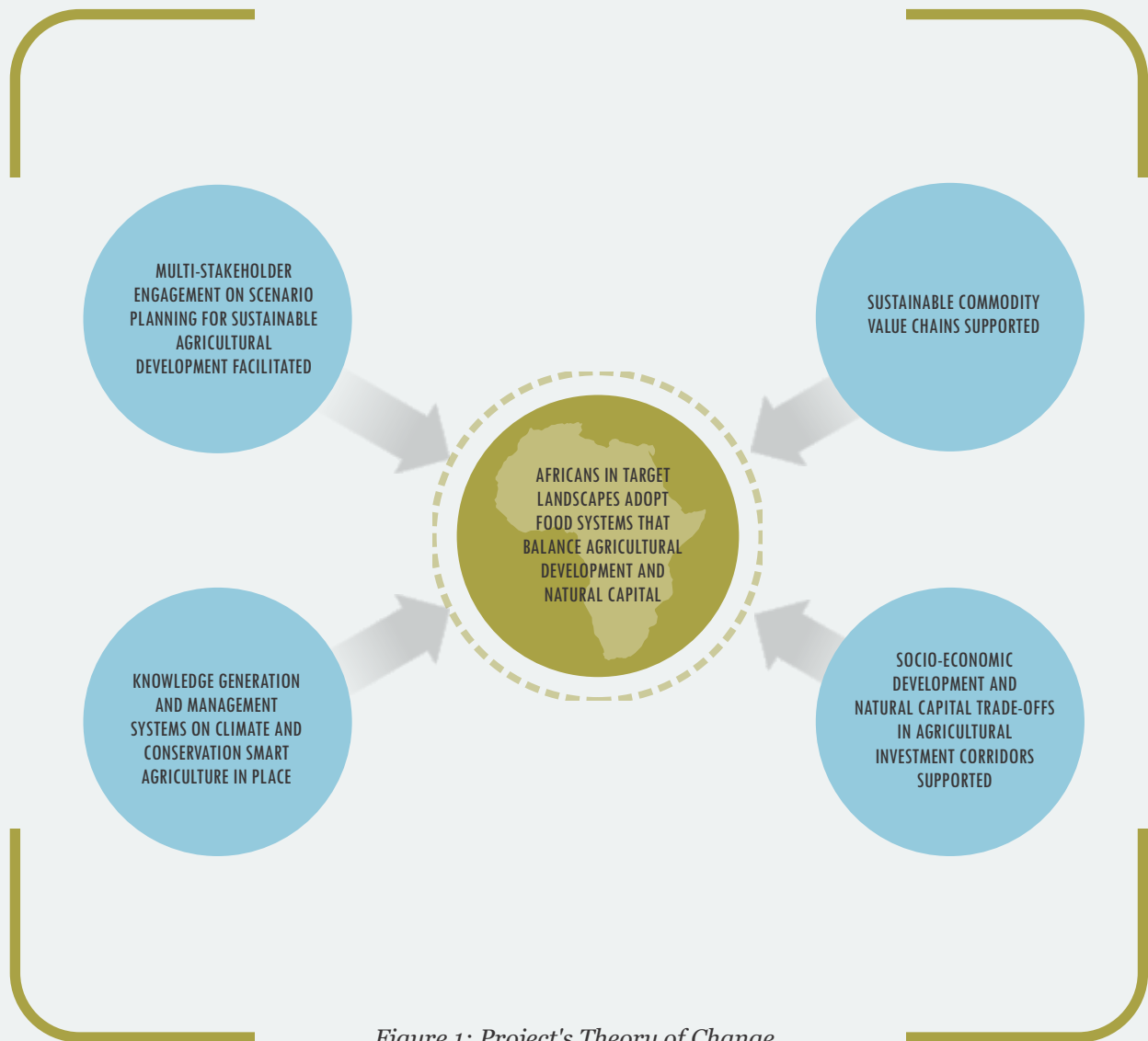


Figure 1: Project's Theory of Change



care



CIAT

Centro Internacional de Agricultura Tropical
International Center for Tropical Agriculture
Centrale Internationale d'Agriculture Tropicale



ICRAF



THE BANKABLE PROJECTS

Together
Possible



The four projects co-designed with CARE, CIAT, ICRAF, AfDB and FAO as key partners are:-

- 1. Multi-stakeholder engagement on scenario planning for sustainable agricultural development in Africa*
- 2. Sustainable value chains for priority commodities in Africa*
- 3. Climate and conservation smart agriculture for sustainable socio-economic development in Africa*
- 4. Agricultural investment corridors: Socio-economic development and natural capital trade-offs.*

The partners actively participated in various brainstorming sessions and at a bankable projects co-design workshop. WWF network colleagues from within and outside Africa contributed in various ways to ensure that a good and compelling project portfolio was produced.



Partners involved in the four project co-design

Project 1: Multi-stakeholder engagement and scenario planning for sustainable agricultural development in Africa

The future of Africa's food systems risks being overwhelmed as demand soars, climate change impacts multiply, and ecosystems are pushed to the brink of collapse. Contributors to the foregoing scenario include:

- a. Complexity and uncertainty around models that build resilience into food systems;
- b. Inefficiencies and broken links with markets internally and externally;
- c. Misaligned incentives that undervalue natural capital in decision making;
- d. Marginalization of entrepreneurial talent of women and the youth;
- e. Underinvestment in innovation and adaptive capacity in food systems; and,
- f. Inadequacy of credible and accessible data on interdependences and risk dynamics between livelihoods, prosperity, farming, ecosystems health, climate change, food markets and infrastructure.

The foregoing adversely impacts on important ecosystems; food systems' resilience to climate change; food production costs; and Africa's ability to feed itself and parts of the world in future. Multi-stakeholder engagement helps to frame desired future food scenarios to help transition towards sustainable food systems in line with sustainable development goals and avails opportunities for businesses, farmers and society. Food simulations facilitate an analytical journey into the future to assess impacts of various strategies within the food and natural capital space. They bring together diverse groups of participants to explore tradeoffs on issues such as food and nutrition security; climate change; post harvest losses; commodity markets; the food, water and energy nexus; value chain efficiencies; and the maintenance of natural capital.

With respect to infrastructure, the Program for Infrastructure Development in Africa (PIDA) outlines 50 of the largest infrastructure projects worth around US\$ 400 billion planned over the next 20 years. How this infrastructure is developed and investments made will fundamentally shape the future of the continent in terms of the nature of the development trajectory.

Food simulations challenge stakeholder teams to build strong inter and intra-African food markets, systemic resilience, healthy ecosystems and economies; and prosperous communities. They bring together business leaders, women and young entrepreneurs, impact investors, knowledge institutions and government authorities to leverage latent energies between unusual partners. They build on the diverse and rich experience of the WWF Global Food Games held in Washington DC in 2015 in partnership with CNA, the Center for American Progress, Cargil and Mars.



With unprecedented growth, integrated land use planning will be required in Africa.

Project goal and objectives

The goal of the project is to model future growth trajectories that foster sustainable socio-economic development in Africa. Its objectives are to:

- a. Bring together multiple stakeholders to frame food scenarios that facilitate a transition to sustainable food systems in Africa; and,
- b. Establish Africa's relevance in the global food space, its links to various parts of the global food system and potential intervention points for sustainable agricultural development.

Key project activities by output

Output 1: Game plan for food simulations in place

Key project activities include:

- a. Agree on focal commodities and themes. Potential commodities include those mainly for food; those for both food and cash; and those mostly for cash as they have different footprint impacts. Potential themes could be around: climate change; biodiversity; food and nutrition security; food, water and energy nexus; and post harvest losses;
- b. Establish the geographical scope of food simulations (viz. continental, sub-continental, country, sub-national, etc.). However, real impact occurs at lower levels where governance and implementation structures are well defined to embrace resultant decisions; and,
- c. Identify a private sector partner to co-financially support the simulations. The entity should have a business interest in the focal commodities and themes and should ideally come on board early to ensure adequate participation in project design and related modalities. Table 2 shows international private sector players working with some of the projects' potential focal commodities on the continent.

Table 2: Private sector players that work with potential project focal commodities in Africa

Private sector player	Potential focal commodity
Unilever	Livestock & dairy, tea, coffee, cocoa, spices, palm oil,
Cargill	Livestock, grains, cocoa, palm oil, cotton, soy beans,
Coca Cola	Fruits, coffee
Monsanto	Plant and seed production
AB InBev/SAB Miller	Grains/cereals
Nestle	Cocoa, dairy, coffee, tea, cereals,
The Kellogg's company	Grains and cereals
Mondelez	Cocoa, grains (wheat,) dairy, sugar
Colgate	Palm oil, soybean, forests
MARS	Cocoa, coffee, tea, fruits, cereals, fish
PepSiCo	Cereals, dairy, fruits & vegetables
Starbucks	Coffee, tea, cocoa
Tongaat Hullett	Sugarcane, maize
Walmart	Energy, sustainable supply chains that include food waste reduction.

Output 2: Food simulations played

Key project activities include:

- a. Select a game designer to handle technical aspects of the food simulations;
- b. Identify appropriate participants/simulation teams to engage in the simulations.
The teams should have: a stake in target commodities and geographies; knowledge of the subject matter; and influence and potential impact on desired project outcomes;
- c. Create adaptable sequences of iterations to action innovations and partnerships;
and,
- d. Prototype actions to drive innovations in targeted contexts with the participation of relevant stakeholders.

Project 2: Sustainable value chains for priority commodities in Africa

Africa has varied and complex market segments that include the international, retail and unregulated markets for its various commodities, the majority of which are not processed at source.

Among Africa's market driven crops are: palm oil, sugarcane, cotton, wheat and bio-fuels that are produced by both large scale commercial farmers and smallholder farmers. The latter are contracted as out-growers to supply centralized agro-industrial processing centres. Such market driven agricultural production and investments are largely based on opening up large tracts of virgin land some of which is unsuitable for agriculture or is ecologically fragile (e.g. wetlands). This has the following implications:

- a. Creates unsustainable agricultural value chains that result in biodiversity loss; landscape fragmentation, degradation and eutrophication; and loss of ecosystems goods and services and ecological integrity. In the case of bio-fuels, global experience has shown that such investments do not yield desired results if not properly guided and responsibly implemented through appropriate and effective policy and legislative measures. Furthermore, some companies investing in export commodity production in Africa are usually small players compared to those operating in developed countries with established histories of commodity exports. Consequently, their management capacity and level of accountability to ensure adherence to “best practice” commitments largely remains unverified; and,
- b. Displaces some communities and ties up land that could be used to produce food for household food and nutrition security.

A cash and market oriented approach to African agriculture can keep young people on the land if it introduces clean, less labour intensive, cost effective, profitable and sustainable technologies across the value chain. Its impact on ecological sustainability will however depend on the adaptation and adoption of internationally recognized product quality, social and environmental standards that can be adhered to by producer countries in consultation with relevant stakeholders such as product markets in consumer countries. This offers opportunities to engage and work with WWF and partner offices in product markets to influence product standards and sensitize and raise awareness among consumers to reject products that do not meet agreed standards. There is also need to lobby large financial institutions such as the African Development Bank (AfDB) to invest in agricultural ventures with least impact on natural capital (viz. high output-least natural capital impact ventures).

It is however worth noting that Africa has varied and complex market segments that include:

- a. International multilaterals that are keen to comply with market requirements due to reputational risks they face for non compliance;
- b. Retail chains that believe in good environmental stewardship as a right thing to do despite non compliance by other outfits operating in the same space; and,
- c. Local unregulated markets that focus on profit maximization at the expense of environmental considerations.



Value addition to palm oil for targeted markets

Project goal and objectives

The goal of the project is to reduce the environmental footprint of priority agricultural commodities using export market driven approaches. Markets influence quantities of crops produced and how and when they are produced. This raises the need for stringent internationally recognized product quality and environmental standards that should be observed by exporting and importing companies. The project's specific objectives are to:

- a. Support sustainable cash crop production technologies including those on post harvest losses across the value chain in target trans-boundary landscapes;
- b. Encourage the consumption of environmentally sustainable and certified products in consumer markets; and,
- c. Support information sharing and capacity building across commodity value chains.

Key project activities by output

Output 1: Sustainable cash crop production technologies and practices supported

The following activities will be undertaken:

- a. Encourage and support project partners working on various aspects of food and nutrition security and sustainable cash crop production to collate and widely share existing information on target crops (e.g. palm oil in the Congo Basin). This includes the area available and suitable for the crop's sustainable production as well as sustainable husbandry and product processing practices. Notwithstanding, some investment might be required for targeted research as appropriate;

- b. Support responsible authorities to undertake land use assessments; trade-off analysis (e.g. productivity versus environmental impacts versus economic benefits versus equity) and opportunity costs; and zoning exercises to identify and map out current and potential areas for cash crop investments and potential “no go” areas and possible mitigation measures. The latter will guard against pushing cash crops into biodiversity sensitive areas and fragile ecosystems; and,
- c. Encourage African governments to institute and enforce laws that support good environment stewardship in food production systems.

Output 2: The consumption of environmentally sustainable and certified products encouraged

The following activities will be carried out:

- a. Encourage market links that promote responsible cash crop production through the development and adoption of internationally recognized environmental sustainability and product standards in consultations with both product producers and buyers as a basis for cash crop certification schemes. This will be complemented by strategies that encourage consumers in importing countries to insist on buying products from certified cash crop plantations as a way of forcing exporting companies to exercise responsible corporate social responsibility in countries they source their products from or operate in. Such commodities include palm oil, sugar, cocoa, cotton, tea, coffee; and,
- b. Encourage financial institutions to invest in areas that have the least impact on the environment.

Output 3: Information sharing and capacity building supported

The following activities will be undertaken:

- a. Support/encourage project partners to document their experiences for sharing and cross learning and for influencing policy formulation in both cash crop producer and demand countries. With respect to policies, producer country governments will be encouraged to provide incentives to investors who implement environmentally friendly practices in cash crop production across the value chain; and support smallholder farmers, especially women and the youth;
- b. Encourage enhancement of management capacity and level of accountability by exporters to ensure adherence to “best practice” commitments; and,
- c. Provide targeted support and training in areas such as the use of integrated land use planning tools.

Project 3: Climate and conservation smart agriculture for sustainable socio-economic development in Africa

Most of Africa's smallholder farmers face challenges of communal land tenure systems, poor soils, low and erratic rainfall, limited inputs, low access to extension and technology and limited entry points to sustainable agricultural value chains, among others. They depend on rain-fed subsistence crop production, achieve low and variable crop yields (less than 30% of yield potential) and experience food and nutrition insecurity. In addition, land and water resources are becoming more stressed than in the past due to soil degradation, salinization of irrigated areas and competition from uses other than food production.

The foregoing is forcing smallholder farmers to open up virgin land as a risk management and survival strategy leading to biodiversity loss; landscape fragmentation and degradation; and loss of ecological integrity. Such changes in land use and integrity are often the first consequence of population and economic growth which entrench poverty and undermine livelihoods. In addition, they worsen human wildlife conflict as the wildlife habitat is reduced. This includes the destruction of crops by elephants and attacks on humans by lions in huge landscapes such as the Kavango Zambezi Trans-frontier Conservation Area (KAZA TFCA) of southern Africa.



Africa smallholder farming, as is the case in the KAZA TFCA, is fraught with many challenges.

The attainment of food and nutrition security at household level requires functional input and output markets and empowerment of shareholders, especially smallholder farmers to effectively benefit from such markets and associated value chains. It is also worth noting that widespread knowledge and experience exists in the domains of conservation agriculture and environmental protection. Such practices minimize soil disturbance and loss; allow for soil structure and nutrient build up; reduce energy

requirements; maximize water retention; and increase commodity yields and reduce costs, especially under less than optimal rainfall conditions. However, cross fertilization, access and use of this knowledge is sub-optimal as results of such work have not been systematically collated into a holistic body of knowledge to influence policy and practice and for cross-learning. Furthermore, gaps that could be resolved through shared/joint research, analysis and information exchange exist in this “shared” knowledge space.

Project goal and objectives

The goal of the project is to avail relevant information and promote more productive, climate resilient and sustainable smallholder agricultural systems that are within Africa's ecological limits and contribute to conserving Africa's rich biodiversity. Its specific objectives are to:

- a. Document and package appropriate smallholder climate and conservation smart agricultural information into readily available knowledge for selected trans-boundary landscapes;
- b. Inform and influence smallholder agricultural production by availing appropriate knowledge management systems; and,
- c. Raise awareness of governments with regards to resilient agriculture in order to reduce inappropriate land allocation or investments in areas of unsustainable growth.

Key activities by output

Output 1: Appropriate climate and conservation smart agricultural packages documented and shared.

The following activities will be carried out:

- a. Map out existing knowledge management/learning platforms and stakeholders involved in this space to provide baselines and identify gaps;
- b. Identify potential partners to co-create appropriate climate and conservation smart knowledge management systems;
- c. Develop a portal to on-going activities and provide links to other websites, key research and other information;
- d. Based on identified gaps, develop appropriate “learning/knowledge sharing” mechanisms such as research projects, reviews and group discussions;
- e. Develop guidance materials for the implementation of climate and conservation smart agriculture; and,
- f. Undertake trade-off analysis (e.g. compare impacts of agriculture-business approaches to smallholder approaches) on the environment and food and nutrition security.

Output 2: Climate and conservation smart knowledge management systems inform and influence smallholder agricultural production.

The following activities will be undertaken:

- a. Support the development and facilitation of multi-stakeholder dialogues and build stakeholder capacity to engage in climate and conservation smart agriculture and related value chains;
- b. Enhance access to value chains that support climate and conservation smart agriculture; and,
- c. Assist governments and other stakeholders to access and “launch” appropriate climate and conservation smart farming practices and materials.

Project 4: Agricultural investment corridors: Socio-economic development and natural capital trade-offs

There is need to influence the investment trajectory in agricultural growth corridors to achieve productive, inclusive and resilient food/agricultural systems. This includes prioritising investment decisions on the physical location of agricultural investment corridors and promoting integrated land use planning and sustainable land use practices.



Type of development that could take place in an agricultural corridor

The concept of investment corridors is being promoted as an approach for accelerating economic development by concentrating essential public and private sector resources and investments in targeted landscapes. Agriculture remains the backbone of most African economies and employs between 70% and 80% of the continent's population. It is against this background that some countries have established agricultural growth corridors (e.g. the Southern Agricultural Growth Corridor of Tanzania-SAGCOT) to marshal investment from the private sector and foster public-private partnerships to support inclusive growth and green agriculture. Agricultural growth strategies can take a variety of forms to foster investments in areas such as production, processing, storage and input and product distribution and improving smallholder access to knowledge and

value chains. However, such initiatives might not be sustainable unless they embrace an ecosystem and natural capital maintenance perspective. There is therefore need to develop models and tools that support an integrated approach, and resilient and inclusive agricultural development including an understanding of where agricultural expansion is physically taking place or likely to take place; what the key commodities and players are/or likely to be; the nature and scope of the associated agro based businesses and their value chains; and likely impacts on natural capital.

In the case of existing corridors, the following observations have been made:

- a. Corridor boundaries can include all or part of important national parks and wildlife migratory corridors and/or areas already experiencing land and water conflicts and institutional failures-increasing the likelihood of adverse impacts on ecosystem services;
- b. There is no shared understanding on the definition and measurement of models for achieving inclusive green growth among project partners, governments and donors;
- c. Given the complexity, a multi-stakeholder approach that harnesses the efforts of regional and national governments, private sector and civil society is essential;
- d. There is need to contribute to improved coordination of partner efforts, identify synergies and agree on how to leverage on resources at community, value chain and landscape levels; and,
- e. Governance around water and land issues is weak.

Project goal and objectives

The goal of the project is to influence the investment trajectory in agricultural growth corridors to achieve productive, inclusive and resilient food/agricultural systems. Its specific objectives are to:

- a. Influence investment decisions on the location of agricultural investment corridors; and,
- b. Advocate for environmentally friendly and sustainable agricultural practices in the corridors.

Key activities by output

Output 1: Investment decisions on the physical location of agricultural investment corridors influenced by supporting improved land use planning

The key activities to be carried out are:

- a. Identify priority agro-industrial processing zones based on existing and future plans of each target country;
- b. Characterise the investment zones in terms of agricultural production & agro-processing practices, productivity levels, support systems and infrastructure, livelihoods, natural capital base and government policies and plans;

- c. Pilot desired and sustainable agro-industrial growth trajectories with emphasis on balancing agro-industrial development and natural capital maintenance; and,
- d. Advocate for investment flows away from high biodiversity areas or propose adverse impact minimizing strategies.

Output 2: Pilot projects that demonstrate resilient and inclusive approaches supported.

Key activities to be undertaken are:

- a. Conduct, with partners, landscape assessments to identify a blueprint for community, landscape and market interventions that align partners and practices around a strategy for long term implementation and scaling up of inclusive climate smart agricultural production systems;
- b. Conduct land use/crop suitability assessments and prioritize sustainable agricultural production practices and market opportunities;
- c. Support the implementation of prioritized climate and conservation smart agriculture strategies/interventions;
- d. Support the development and implementation of village level land use plans for sustainable natural resource management;
- e. Facilitate the development and implementation of plans that contribute to upstream and downstream governance rules for water resources management;
- f. Explore payment for ecosystems services (PES) opportunities; and,
- g. Facilitate the development and use of monitoring protocols that measure green and inclusive growth by corridor partners.



THE BUDGET



The implementation of the Africa Food Transformational Project will require substantial resources. WWF will have to work closely with its partners to mobilise resources to make the implementation of these bankable projects a reality. This will entail bringing various potential development partners interested in the agricultural production and food nexus to the table for financial resource mobilisation.



Resourcing this Africa Transformational Project requires thinking “outside the box”

Project Landscapes and Budgets

The Project will be carried out in countries such as Cameroon, the Democratic Republic of Congo, Gabon, Tanzania, Mozambique, Zambia and Zimbabwe. Its focal landscapes are Kavango Zambezi Trans-frontier Conservation Area (KAZA TFCA), the Congo Basin and selected Agricultural Investment Corridors as highlighted below:

- a. KAZA TFCA-Southern Africa: KAZA TFCA is a joint initiative between the governments of Angola, Botswana, Namibia, Zambia and Zimbabwe to collectively manage the largest TFCA in the world. The TFCA encompasses about 287 132 km² of land that includes 36 national parks and game reserves; forest reserves; community conservancies; game management areas; and wildlife management areas. It has a rich array of conservation assets that include approximately half of Africa's elephant

population; small but increasing numbers of black rhino and significant patches of commercial indigenous tree species such as Zambezi Teak (*Baikiaea plurijuga*). KAZA is however threatened by increasing investments in infrastructure and a growing population largely reliant on subsistence smallholder agriculture, among other issues.

- b. The Congo Basin - Central Africa: The Congo Basin, known as the Green Heart of Africa, is the second largest rainforest in the world. It has 400 mammal species (e.g. forest elephants and African great apes), 1,000 bird species and over 10,000 plant species, many of which are endemic to the area. The Basin covers Cameroon, Central African Republic, The Democratic Republic of Congo, Equatorial Guinea, Gabon and Republic of Congo. It embraces landscapes such as Salonga, Virunga, TRIDOM & Lake Tumba. It is largely threatened by unrelenting international timber demand that fuels illegal logging; population growth; subsistence farming; and the proliferation of extractive industries.
- c. Agricultural Investment Corridors – East and Southern Africa: Agricultural Investment Corridors are a concept that emerged from the World Economic Forum and offer economic development opportunities for agricultural transformation, especially to smallholder farmers in areas of good agricultural potential. They focus on increasing agricultural production and productivity, and on ensuring that the necessary infrastructure, policy environment and knowledge and knowledge management systems in target landscapes are in place. Among the best known Corridors are the Beira Corridor of Mozambique and the Southern African Agricultural Growth Corridor of Tanzania (SAGCOT). The latter covers one third of mainland Tanzania, the country's bread basket that receives very high rainfall and is a tourist attraction with several plateaus, grasslands and the Great Rift Valley. Major threats to agricultural corridors include population growth, agricultural and infrastructural expansion, re-ordering of land and water use and loss of land by some communities. Unless Corridor development is planned in an integrated manner, such developments can reduce ecosystems and habitat integrity and adversely affect livelihoods of communities.

Final Project design within the landscapes will emphasize the harnessing of synergies across the food-water-energy-sustainable financing nexus (Figure 2). The link between food and the other three elements of the nexus are that:

- a. Food production requires adequate amounts of water while excessive water use for food production negatively impacts on landscape hydrology and overall ecosystems integrity;
- b. African food production relies on human, animal and other sources of power, whose availability or lack thereof affects agricultural performance; and,
- c. While appropriate investments are required for enhancing agricultural productivity and profitability, poorly planned ones compromise ecosystem and habitat integrity.

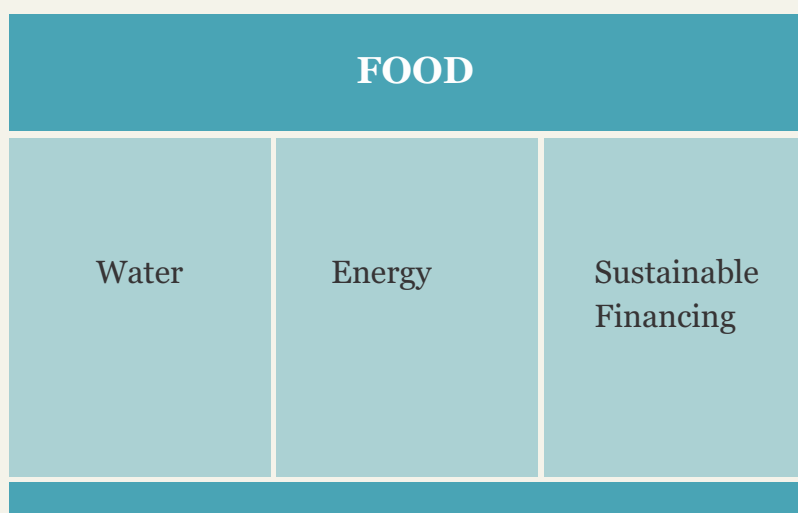


Figure 2: Food-Water-Energy-Sustainable financing Nexus

The total budget for the four bankable projects is US \$20.5 million over five years (Table 3).

Table 3: Project budget over 5 years

Bankable project	Budget, \$ million
Multi stakeholder engagement on scenario planning for sustainable agricultural development in Africa	2.5
Sustainable value chains for priority commodities in Africa	5.0
Climate and conservation smart agriculture for sustainable socio-economic development in Africa	6.6
Agricultural investment corridors: Socio-economic development and natural capital trade offs	6.4
Total	20.5

Key Partners

Key project partners include those involved in food and nutrition security; agricultural technology generation, adaptation and promotion; and climate smart agriculture. They are CARE, CIAT, ICRAF and AfDB. Table 4 shows the focal commodities and thematic areas of the project partners. WWF will bring expertise in sustainable value chains and enhancing landscape resilience as well as being a respected convener and facilitator. Its areas of expertise include: provider of relevant tools such as food, integrated land use planning and ecosystems resilience models and methodologies; and advocator for appropriate policies, approaches and tools.

Table 4: Mandated commodities and focal thematic areas by project partner

Project partner	Commodity	Thematic area
CARE	Cocoa, fruits & vegetables, cassava, rice, sorghum, millet, cassava, beans, maize	Food & nutrition security, climate change, water, environment, food loss & waste
CIAT	A wide range of crops, livestock, dairy	Climate change, food security, soil fertility, food loss & waste
ICRAF	Cashew, cocoa, tea, coffee, tobacco, forests/ trees, banana, mango, palm oil, cassava, cereals,	Climate change, water, forestry, biodiversity, environment, biomass energy, food loss & waste
AfDB	Cocoa, cashew, coffee, cotton, palm oil, bananas, rice, cassava, sorghum, millet, livestock, beans	Climate change, water, environment, energy & power, food security, food loss & waste

Each bankable project will have a key set of partners that share responsibility for final design, packaging, resource mobilization, implementation and coordination. The primary delivery unit for WWF will be country level landscapes where WWF offices will work with relevant partner institutions. Leadership of various project activities at that level will depend on the comparative advantage of each partner. For purposes of up scaling; cross learning; and influencing entities such as national governments, potential multi-lateral investors, regional economic groupings like SADC, EAC and ECOWAS, the project will have cross-country coordination. In the case of WWF, the Regional Office for Africa (through a designated lead country office) will provide this. Appropriate partner structures will be used for regional level partner coordination.

References

- AGRA, 2013. Africa Agriculture Status Report: Focus on Staple Crops. Nairobi, Kenya, Alliance for a Green Revolution in Africa (AGRA). Available at: <http://reliefweb.int/sites/reliefweb.int/files/resources/agrafinalaugust20akim.pdf> [Accessed November, 2016].
- IAASTD, 2009. Agriculture at a crossroads: Sub-Saharan Africa (SSA) report (Vol. V). International Assessment of Agricultural Knowledge, Science and Technology for Development. Washington, DC: Island Press.
- Jayaram, K., Riese, J., and Sanghvi, S., 2010. Agriculture: Abundant opportunities. McKinsey Quarterly, Summer 2010.
- Deweese, P., Place, F., Scherr, S.J. & Buss, C., 2011. Investing in Trees and Landscape Restoration in Africa: What, Where, and How. Washington, DC: Program on Forests (PROFOR).
- GIZ, 2013. The Ecological footprint of cassava and maize postharvest losses in Nigeria. A Life Cycle Assessment. Eschborn: GIZ
- Oxfam, 2015. Africa's Smallholders Adapting To Climate Change. Joint Agency Briefing Note. Available at https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bn-african-smallholders-climate-change-141015-en.pdf [Accessed November, 2016]
- IndexMundi, 2016. Agriculture. Accessed 20 May 2016. <http://www.indexmundi.com/commodities/?commodity=palm-oil&months=360>
- WWF/AfDB, 2015. Africa Ecological Features. Available at http://wwf.panda.org/who_we_are/wwf_offices/regional_office_for_africa/african_ecological_futures/ [Accessed November, 2016].
- World Bank, 2011. Missing Food: The Case of Postharvest Grain Losses In Sub-Saharan Africa, Report No. 60371-AFR. Washington, DC: World Bank Available at https://siteresources.worldbank.org/INTARD/Resources/MissingFoods10_web.pdf [Accessed November, 2016].

FOOD IN AFRICA

RECYCLED



25

Has 25% of world's arable land

10

Contributes 10% of global food output

70

70% of its food is produced by smallholder farmers

30

Achieves only 30% of its crop productivity potential

33

33% of its food is lost in post harvest losses



Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

panda.org

© Panda Symbol WWF – World Wide Fund For Nature (Formerly World Wildlife Fund)
® "WWF" is a WWF Registered Trademark. Zimbabwe Country Office:
10 Lanark Road Belgravia Harare Tel: +263-4-252532 to 4. Email: wwfzimbabwe@wwf.org.zw
information, please visit our international website at panda.org