GENERAL NOTICES • ALGEMENE KENNISGEWINGS

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

NOTICE 428 OF 2018

DRAFT CLIMATE SMART AGRICULTURE STRATEGIC FRAMEWORK FOR AGRICULTURE, FORESTRY AND FISHERIES

I, Senzeni Zokwana, Minister of Agriculture, Forestry and Fisheries hereby invite all interested parties to submit written inputs and comments on the **Draft Climate Smart Agriculture Strategic Framework.**

Inputs and comments must be submitted in writing for attention to IkalafengK@daff.gov.za and SeneoM@daff.gov.za respectively within *60 days* from the date of this publication. Alternatively inputs and comments can be sent to:

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DRAFT CLIMATE SMART AGRICULTURE STRATEGIC FRAMEWORK

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES (DAFF)

FOREWORD

The Intergovernmental Panel on Climate Change (IPCC) has unequivocally noted that we are witnessing climate change and its related effects. The South African government supports the view expressed by the IPCC. The South African Constitution notes that, 'everyone has the right to an environment that is not harmful to their health and wellbeing'. It further states that we have a right to secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development'. In line with the Constitution, the National Development Plan (Vision 2030) acknowledges the detrimental effect of greenhouse gases (GHG) and their contribution to climate variability and change.

South Africa's Climate Change Response White Paper (2011) sets forth that climate change poses risks to various key sectors of the South African economy, *viz*., water, agriculture and forestry. Various aspects of the South African economy are vulnerable to the increased intensity and frequency of extreme weather events such as droughts and floods. The agriculture sector plays a critical role in the South African economy. Climate change is currently negatively impacting on agriculture production both in aquaculture, plant and animal farming. This will inherently impact negatively on the sustainability of the agriculture sector and its ability to provide food and employment opportunities.

This framework outlines the role that Climate Smart Agriculture (CSA) can play in addressing vulnerabilities facing the agriculture sector. Various stakeholders, and farmers, have a role to play in promoting resource efficiency, increased productivity and social equity through mitigation and adaptation efforts. All South Africans have a role to play through implementation of this framework in ensuring sustainability of the agriculture sector as one of the anchors of our Gross Domestic Product (GDP). Targeted efforts will be made to ensure that women, youth, people living with disability and subsistence farmers are involved in implementation of this framework.

Director General

Department of Forestry and Fisheries

ACKNOWLEDGEMENTS

The preparation of the South Africa's Strategic Framework on Climate Smart Agriculture has drawn from insightful contributions from a multi-disciplinary team of experts from the Department of Agriculture, Forestry and Fisheries (DAFF), Department of Environmental Affairs (DEA), farmers, civil society organization (CSOs), private sector, researchers, the academia and other development partners. The DAFF team, led by Dr Ikalafeng Kgakatsi, supported by Mr Matiga Motsepe and Seneo Madikiza, played a significant role in the development of the Framework. This Framework is largely informed by sectoral reports on Agriculture, Forestry, and Fisheries. Dr Timothy Dube, Professor Kingsley Ayisi and Professor Ngoni Moyo of the University of Limpopo developed the sectoral reports respectively. DAFF also acknowledges the contribution of the Muvuledzi team in the development of the Framework. The team members were Mr. Alum Mpofu (Project Manager). Dr Mpho Nenweli (Project Director), Dr Sithabiso Gandure (Climate Change Specialist), Ms. Delani Mathebula (Climate Change Specialist), Ms Leisa Perch (Social and Environmental Specialist), Tsumbedzo Mudalahothe (Agriculture specialist) Mercedes Marele and Nyiko Sambo (project intern and administrative assistant).

EXECUTIVE SUMMARY

With global warming as its most evident form, climate change is considered a serious challenge for mankind in the present century with no country or region of the world immune to its impacts. Increased greenhouse gas (GHG) emissions that is human-induced has resulted in additional warming of the Earth's surface, with several anticipated disastrous impacts for developing regions such as Africa - the least emitter of GHGs. Climate change is posing serious threats at all levels of society and national government. The most devastating adverse impacts of climate change in most subtropical regions such southern Africa include increased frequency and intensity of extreme weather events such as droughts, floods, heat, environmental damage, increased infestation of crops by pests and diseases, depletion of household assets, increased rural urban migration. Other challenges include increased biodiversity loss, depletion of wildlife and other natural resources, changes in the vegetation types, decline in forest resources, decline in soil conditions (soil moisture and nutrients), increased health risks and the spread of infectious diseases. Additionally, climate change is negatively impacting on changing livelihood systems.

Climate change dynamics are extremely complex and not yet generally thoroughly understood, especially regarding the extent, timing and impacts of projected changes. Furthermore, projections of impacts in the Agriculture, Forestry and Fisheries sector in South Africa are often complicated by different scientists applying different sets of climate scenarios and using different modelling approaches, thus making it challenging to extract coherent key messages. Notably, South Africa is already in a high risk climatic environment by virtue of its straddling the 20 - 35°S latitudinal range and the geographical position of the country in relation to weather systems to the south of the continent, which renders it particularly sensitive and vulnerable to geographical shifts in climates. Potentially there are serious effects that climate change can have on the South Africa's low lying areas, infrastructure, socio-economic activities, human health, water resources and food security. The effects are not necessarily always negative, however, and positive spin-offs are likely to occur although the latter need to be identified and maximised.

Initial efforts at dealing with the problem of global warming at international level concentrated on mitigation, with the aim of reducing and possibly stabilizing the GHG concentrations in the atmosphere. The fact that pollution emissions are measurable made mitigation a more favourable option to responding to climate change. Stabilisation of GHG's primarily depends upon changes in technology, discovery of new and less polluting fuels and with awareness in human behaviour towards natural resources and their utilisation. However, in more recent times, adaptation has also featured strongly in most international discussions. For developing countries such as South Africa, it has been increasingly realised that whilst mitigation and adaptation should be pursued together, a strong bias should be towards adaptation due to the prevailing vulnerable ecosystems, biodiversity and people. Adaptation is defined as an adjustment in natural or human systems in response to actual or expected climatic stimuli or

their effects, to reduce harm or take advantage of opportunities.

This Framework starts from the premise that the Agriculture, Forestry and Fisheries (AFF) sector's adaptive capacity is closely linked to South Africa's level of economic development, based on factors such as the range of technological options available, the availability of resources, and the stock of human capital. In policymaking and CSA implementation, the Framework emphasises factors such as vulnerability, the structure of critical institutions, risk perception, and patterns of decision-making authority. The Framework therefore emphasises that the goal of promoting effective adaptation responses and increasing adaptive capacity should be to reduce vulnerability and increase overall resilience of South Africa's AFF systems, including their socio-economic and institutional characteristics.

This Framework recognises that integrating mitigation and adaptation strategies into production systems are not a completely new idea in rural South African traditional production systems and communities. This Framework recommends that more resources be invested into researching these indigenous knowledge systems with the involvement of local subsistence and commercial farmers. DAFF must take into consideration this body of indigenous knowledge in the formulation and implementation of mitigation and adaptation strategies.

In particular, CSA actions identified in this Strategic Framework include: *reducing vulnerability, increasing adaptive capacity, addressing specific risks related to climate variability and climate change, exploring sector-specific opportunities in the context of a changing climate and promoting communication and research.* Adaptation strategies identified will include the adoption of efficient environmental resources management practices such as the planting of early maturing crops, adoption of hardy varieties of crops and selective keeping of livestock in areas where rainfall has declined. They also include the use of technological products that enable the individual to function in the ''new'' CSA environment. To act, adaptive capacities will need to be supported. This refers to the capabilities, resources and institutions available to a country or region to implement effective adaptation measures[1]. Adaptation efforts also need to be complemented by mitigation measures such as carbon capture, securing forests, replanting trees and use of renewable energy.

The five core objectives of the Framework are:

- To guide actions at all levels of government, investors and development partners on mainstreaming CSA into agriculture, forestry and fisheries plans, programmes and projects.
- Contribute to increasing productivity and growth of agricultural, forestry and fisheries related value chains with nutrition and gender considerations.
- Enhance resilience to climatic and weather shocks on the social, environmental, and economic aspects of agriculture, forestry and fisheries production and food systems.
- Contribute to low carbon development through efficient use of agricultural, agribusiness, forestry and fisheries resources to reduce national emission intensity

[1] (IPCC, 2007)

in the AFF production and food systems.

- Strengthen governance and institutional coordination for effective implementation of the Climate Smart Agriculture Framework Programme at the national, Provincial and local levels.

ABBREVIATIONS AND ACRONYMS

AEZ	Agro Ecological Zone
AFF	Agriculture, Forestry and Fisheries
AgGDP	Agriculture Gross Domestic Product
AR5	Fifth Assessment Report (of the IPCC)
AU	African Union
AUC	African Union Commission
CA	Conservation Agriculture
CAADP	Comprehensive African Agriculture Development Programme
CBOs	Community Based Organizations
CGIAR	Consultative Group of International Agricultural Research
COMESA	Common Market for Eastern and Southern Africa
COP	Conference of the Parties
CSA	Climate Smart Agriculture
CSO	Civil Society Organization
DAFF	Department of Agriculture, Forestry and Fisheries
EbA	Ecosystem-based Adaptation
FAO	Food and Agriculture Organization of the United Nations
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GHG	Greenhouse Gas
GoSA	Government of South Africa
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
MDG	Millennium Development Goals
MRV	Monitoring/Measurement/Monitoring, Reporting and Verification
NAMA	Nationally Appropriate Mitigation Action
NGO	Non-Governmental Organisation
ODA	Official Development Assistance
PES	Payments for Environmental Services

PPP	Public Private Partnership
REDD+	Reduced Emissions from Deforestation and forest Degradation, the role of forest conservation, sustainable management of forests and enhancement of forest carbon stocks'
SA	South Africa
SADC	Southern African Development Community
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

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1. INTRODUCTION

This National Climate Smart Agriculture (CSA) Strategic Framework (hereafter referred to as the Framework) is a broad strategic guideline. The Framework puts emphasis and focus on mitigation and adaptation strategies, and it also recognises that the agricultural sectors, *viz.,* aquaculture, forestry and fisheries play a significant role in South Africa's economic development and social transformation aspirations. The Strategic Framework is an initiative of the national Department (*viz*., DAFF) developed through a multi-stakeholder and multi-disciplinary stakeholder approach with inputs from Provincial Governance structures.

The strategic actions /outcomes defined and put forward are largely informed by the national perspective and provide a platform for collaboration and ensuring adequate integration with other inter-governmental and intra-departmental priorities and programmes. The Framework, with its vision and general actions, is intended to be a guide to agriculture sectors. Provinces and local government play a pivotal role in policy formulation for the sector, identifying the main provincial and local approaches to be employed, and facilitating implementation of CSA. The Strategic Framework will guide the drawing up of annual plans for CSA actions. Further, it will guide farmers on opportunities that they can harness to promote productive and sustainable agriculture.

In terms of implementation, the Framework considered matters that relate to the need to be fiscally and technologically feasible (*i.e*. possible with current technology and financial capacity). It also takes the view that there are actions that can be done immediately, and priorities that require more research, funding and institutional development or change over the longer term.

Notably, much of the priority areas put forward by the Framework build on actions, programmes and initiatives that are already in place, run by the state, non-state or sectoral actors. It also draws upon experiences of farmers from various parts of the country. Many of the priority areas to promote adaptation focus on measures and policies that already exist and would need to be enhanced, transferred, built on, and provided with more funding to encourage effective actions. It is the view of this Framework that building on ongoing initiatives

in the Provinces and at local level, disseminating best practices and providing a range of options to farmers is key to encouraging future adaptations. Farmers and fishers are already aware of local changes related to climate change and they are adapting at local level.

This Framework should be regarded as a living document to be continuously modified as issues emerge, knowledge expands, and capacities change. It is intended to have an evolving lifespan stretching between 2018-2028. The Framework will be subject to review in the medium term in 2023.

At the core of all the challenges experienced in South Africa's economic growth trajectory including the Agriculture, Forestry and Fisheries subsectors, are the increasing challenges of poverty, unemployment and inequality. The rising triple challenges call for heightened consideration of more inclusive models of growth. This Framework was developed with the aim of creating a socially inclusive and sustainable agricultural, forestry, fisheries and natural resource management underpinned by increased productivity for national food security and nutrition. Gender equality and social inclusion (especially of youth and people living with disability) cuts across all thematic areas of the strategic framework.

2. MULTILATERAL AGREEMENTS ON CLIMATE CHANGE: AN OVERVIEW

The rationale for co-operation with relevant international organizations, such scientific bodies, United Nations (UN) agencies and other conventions, stems from the interlinkages between the issues that they address. For example, the Rio conventions, Convention on Biological Diversity (CBD), United Nations Convention to Combat Desertification (UNCCD) and the United Nations Framework Convention on Climate Change (UNFCCC), share a common concern for many environmental and sustainable development issues, and their respective Parties have endorsed participatory processes with the full involvement of populations. Benefits for South Africa's climate change policy framework from international co-operation include:

(1) Ensuring that the framework has the best scientific and other relevant information

available.

(2) Ensuring that the climate change related activities of other international organizations respond to the needs of South Africa,

(3) Ensuring the environmental integrity of the conventions by promoting synergies under the common objective of sustainable development, to avoid duplication of efforts, strengthen joint efforts and use available resources more efficiently.

South Africa's climate change policy framework should promote complementarity between the National Biodiversity Strategies and Action Plan (NBSAP) under the CBD, the National Action Programme (NAP) of the UNCCD, and the National Communications and implementation of the Paris Agreement of the UNFCCC. Such a process can be facilitated by enhancing collaboration among national focal points of the three Rio Conventions.

There are many items in the UNFCCC work programme that are relevant to South Africa's climate change policy framework. The UNFCCC's main objective is to achieve the stabilisation of greenhouse gas emissions at a level preventing dangerous anthropogenic interference with the climate system. The linkage with biodiversity is that Parties need to achieve reduction of greenhouse gases to a level and within a time frame that allows ecosystems to adapt to climate change. At the Paris Conference of Parties – COP 21 in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal.

The Paris Agreement builds upon the UNFCCC and – for the first time – brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support for developing countries. Parties agreed to:

- a long-term goal of keeping the increase in global average temperature to well below 2°C above pre-industrial levels;
- limit the increase to 1.5°C, since this would significantly reduce risks and the impacts of climate change;

- the need for global emissions to peak as soon as possible, recognising that this will take longer for developing countries;
- undertake rapid reductions thereafter in accordance with the best available science;
- strengthen societies' ability to deal with the impacts of climate change; and
- provide continued and enhanced international support for adaptation to developing countries.

As such, the Paris Agreement charts a new course in the global climate effort. To reach these ambitious goals, appropriate financial flows, a new technology framework and an enhanced capacity building framework will be put in place, thus supporting action by developing countries and the most vulnerable countries, in line with their own national objectives. The Paris Agreement also provides for enhanced transparency of action and support through a more robust transparency framework. In the Paris Agreement, each country determines, plans and regularly reports its own contribution it should make to mitigate global warming. There is no mechanism to force a country to set a specific target by a specific date but each target should go beyond previously set targets.

The Paris Agreement requires all Parties to put forward their best efforts through “nationally determined contributions” (NDCs) and to strengthen these efforts in the years ahead. This includes requirements that all Parties report regularly on their emissions and on their implementation efforts. In 2018, Parties will take stock of the collective efforts in relation to progress towards the goal set in the Paris Agreement and to inform the preparation of NDCs. There will also be a global stocktake every 5 years to assess the collective progress towards achieving the purpose of the Agreement and to inform further individual actions by Parties.

3. THE SOUTH AFRICAN CLIMATE CHANGE POLICY CONTEXT: A SUMMARY

In 2011, South Africa developed the National Climate Change Response Policy (NCCRP). The Policy presents the South African Government’s vision for an effective climate change response, and the long-term just transition to a climate-resilient and lower carbon economy

and society. The Policy has 2 objectives namely to:

a) Effectively manage inevitable climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity (adaptation).
b) Make a fair contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner (mitigation).

The policy's overall approach to implementation is developmental, in that climate change responses are prioritised where they have significant mitigation and adaptation benefits, and significant economic growth, job creation, public health, risk management and poverty alleviation benefits. The policy requires effective coordination, cooperation and governance from key sectoral departments, spheres of government (provincial and local government) and participation of civil societies and non-governmental organizations. Noting the policy requirements, there is a need to examine different views and theories to effect coordination, cooperation and governance. It is important to acknowledge adaptation pressures and responses cut horizontally across the ministerial (or departmental) organizations of governments, different jurisdictional levels (from the international, national to provincial and local levels) of policy-making. There is need for addressing uncertainties by integrating knowledge in decision-making, and involvement of non-state stakeholders and the broader public in the governance of climate change adaptation[2].

The overall approach to implementation is developmental, in that climate change responses are prioritised where they have significant mitigation and adaptation benefits, and significant economic growth, job creation, public health, risk management and poverty alleviation benefits. The implementation of the NCCRP includes the development of a set of long term adaptation scenarios for key sectors, based on a set of consensus locally relevant climate scenarios, that would inform an integrated approach to planning and implementation of South Africa's adaptation response; as well as developing a national monitoring and evaluation system that tracks South Africa's transition to lower carbon and climate resilient economy and society. The climate change adaptation work facilitates for an effective climate change

[2] (Bauer et al. 2012)

response through interventions that build resilience and emergency response capacity. This work is organized within the generic domains of policy, research, planning, and implementation.

The National Climate Change Response White Paper encouraged:

(i) the development of Long Term Adaptation Scenarios-Flagship Research Programme, with clear emphasis on the need to develop and compile impacts assessments, and identify broad response options and research needs for key sectors, i.e. water, agriculture and forestry, human health, marine fisheries, biodiversity, human settlement (coastal, rural and urban), and disaster risk reduction,

(ii) facilitation for policy and regulatory alignment through interventions, review and integration of the relevant existing or new policies, that contribute towards the national priorities of job creation, poverty alleviation or have other positive socioeconomic benefits,

(iii) climate change adaptation support for national, provincial and local government through coordination, awareness and training, (iv) and reducing the vulnerability of society to climate-related hazards through better provision of climate services and use of climate information in decision-making.

4. THE FORMULATION OF THE CSA STRATEGIC FRAMEWORK

To be effective, this framework needs to be accepted and owned by all stakeholders who will use it. For instance, political commitments need involvement of leaders and decision makers; technical feasibility requires participation of professional groups; implementation needs ownership of implementers at all levels and awareness amongst the public. Therefore, the development process of the framework was planned to be representative. In particular, stakeholders including the Food and Agriculture Organisation (FAO), sector government departments (Environmental Affairs, Education and others), Commodity Organisations such as GrainSA, research and academic institutions, Non-Governmental Organisations (NGOs),

farmer's organisations, and other programme directorates within the lead department, DAFF were closely involved in the framework formulation.

The initial phase involved the production of CSA situational reports for each of the three Agriculture Forestry and Fisheries (AFF) subsectors, viz., Agriculture, Forestry and Fisheries. A small technical team of experts prepared the CSA situational reports. The situational reports provided insight into the status of climate change impacts on the three agricultural sectors and determined the current state of CSA research in SA, the policy setting, CSA project implementation, finance and related information. CSA research and implementation was also investigated from a regional and international perspective to ensure that this Framework is located within the prevailing international discourse on climate change.

Over a three months' period the technical specialists undertook the sector assessments through in-depth literature reviews and a comprehensive consultation process. Views were solicited from scientists who generate the data, and from government officials and civil society, who use the data, and from donors, who may potentially help fund the CSA actions. Their views were incorporated into the situational reports that then underwent a formal review process conducted by experts on climate change and the agriculture sector. The status reports were then presented to stakeholders at a national workshop held for that purpose in February 2017. This workshop was attended by approximately sixty experts from various organisations, *viz.*, DAFF, NAMC, ARC, PDA-WC, PDA-FS, PERMACULTURE, Eco Africa, Green Capacity, Green Zone Network, SAWS, UNISA, DEA, University of Limpopo, DWS, PDA-KZN, TAU, CSIR, DRDLR and the Land Bank. The participants mainly represented sectors such as academia, government and private sector.

The workshop dialogue, facilitated by an independent facilitator, was guided by information that had emerged from the situational reports. Specific contributions and comments received during the workshop were incorporated into the CSA situational report documents. A formal and comprehensive workshop report was compiled. The situational reports and the workshop report became the basis for drawing up a draft CSA Strategic Framework document. The draft framework document was then presented to stakeholders at provincial workshops hosted by DAFF through the month of July 2017. Provincial workshop reports

highlighted inputs from stakeholders on CSA implementation and mainstreaming into the AFF sectors. These Provincial stakeholder inputs were incorporated into the Draft Strategic Framework document. The Draft document incorporating provincial inputs was then reviewed by selected specialists from Muvuledzi Consulting, DAFF and other selected stakeholders. It was finally presented at a National Stakeholder workshop held in October 2017 for review and adoption.

This final CSA Framework is a product of a negotiated balance between the scientifically sound, the diplomatically acceptable, politically relevant and the demands and realities of farmers, foresters and fishers aiming to manage their natural resources in a sustainable manner. The implementation of the Framework hinges on effective advocacy activities among decision makers, provincial and local authorities. This framework will be followed by the formulation of CSA projects to be implemented through diverse partnerships.

5. THE CLIMATE SMART AGRICULTURE STRATEGIC FRAMEWORK

5.1 Mainstreaming CSA into AFF subsectors

This framework defines mainstreaming CSA into the Agriculture, Forestry and Fisheries subsectors as:

- *An informed, systematic and harmonious inclusion of relevant Climate Smart Agriculture concerns, principles and practices and issues in all the three subsectors programme decision-making processes, policies and laws, institutions, technologies, standards, planning frameworks and actions, and to ensure that these continue to be part of the agenda in subsequent decision-making processes, implementation and revision.*

The definition above shows that if CSA mainstreaming is to be successful, it must be seen to permeate all types of planning frameworks that give effect to the implementation of Agriculture, Forestry and Fisheries sector programmes in general and of CSA issues (e.g. policies, laws, standards, institutions, principles, practices, technologies, curricula, funding

mechanisms, programmes, projects, plans, monitoring and evaluation, etc.)

This framework has identified entry points, which offer a better chance of tackling mainstreaming constraints and getting CSA on the Agriculture, Forestry and Fisheries programme. These *entry points* and *drivers* cut across all levels: they are at national, provincial, local and project level. The *entry points* are the key points in policy and planning cycles, particularly those concerning safeguards, prioritisation and investment choices.

Box 1 below shows that the Agriculture, Forestry and Fisheries programmes offer a range of potential entry points and drivers for CSA mainstreaming and indicate that there is a range of scale dimensions for CSA mainstreaming.

Box 1: Scale dimensions of CSA mainstreaming

Temporal scale: CSA mainstreaming could take place over a range of time periods, from a single day used to raise an issue, to a decade-long campaign. Similarly, the benefits of CSA will be experienced over varying time scales.

Geographic scale: CSA will be undertaken in a range of physical spaces, *e.g.* in a small geographic area, such as an individual farm or community, across a district or entire country, or in an ecosystem or agro-ecological region.

Institutional scale: CSA will involve actors (organisations and individuals) at different levels from very local to international for example: local community resource users; government, the business sector and NGOs at national, provincial and local levels; and international (e.g. UN) organisations, parties to multilateral environmental agreements and global financial market actors.

Financial scale: CSA will be promoted in various ways, *i.e.*, through projects with dedicated budgets of varying sizes; financing mechanisms or through the regular operations of international organisations, government departments/agencies or other actors such as NGOs, farmers or private sector companies.

The strategic framework has a vision for CSA in AFF sub sectors. It revolves around five strategic objectives while guided by nine principles to deliver on seven strategic objectives or priority areas as reflected in Figure 1.

5.1 Vision Statement

A socially inclusive, climate resilient and sustainable Agriculture, Forestry and Fisheries (AFF) sectors attaining high productivity for national food and nutrition security through climate-smart agricultural practices.

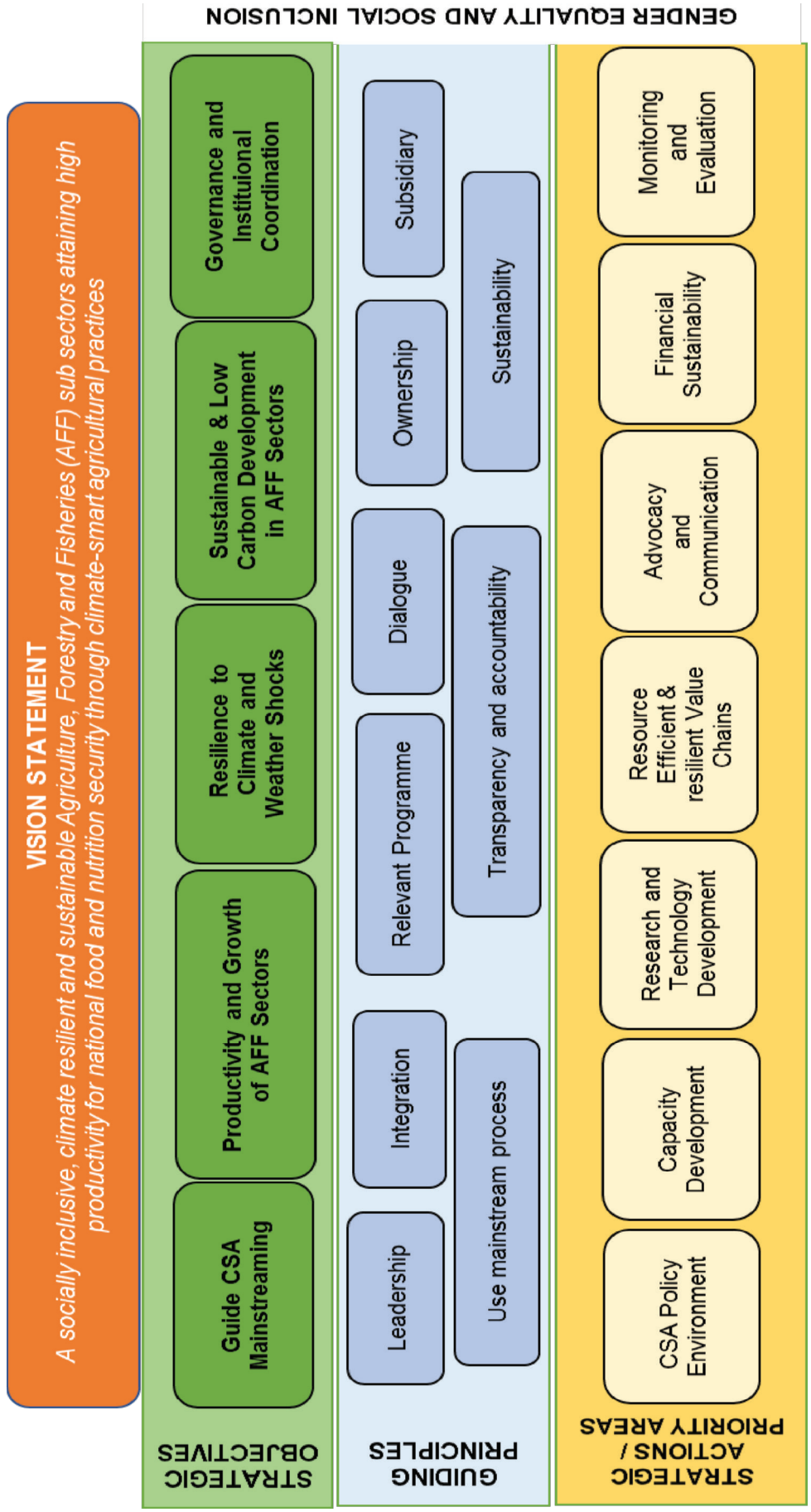

Figure 1: Climate Smart Agriculture (CSA) Framework

5.2 Strategic Objectives

The following strategic objectives embody the CSA Framework:

I. To guide actions at all levels of government, investors and development partners on mainstreaming CSA into agriculture, forestry and fisheries plans, programmes and projects.
II. Contribute to increasing productivity and growth of agricultural, forestry and fisheries related value chains with nutrition and gender considerations.
III. Enhance resilience to climatic and weather shocks on the social, environmental, and economic aspects of agriculture, forestry and fisheries production and food systems.
IV. Contribute to low carbon development through efficient use of agricultural, agribusiness, forestry and fisheries resources to reduce national emission intensity in the AFF production and food systems.
V. Strengthen governance and institutional coordination for effective implementation of the Climate Smart Agriculture Framework Programme at the national, Provincial and local levels.

5.3 Guiding Principles

The following set of principles will guide CSA mainstreaming into the Agriculture, Forestry and Fisheries sector programmes:

Leadership: the mobilisation and creation of political will and awareness at the highest "mainstream" levels possible, engaging with 'champions' who can trigger and institutionalize the necessary processes.

Integration: a 'two-way' approach where CSA and AFF sector programme approaches are integrated with mutual respect and adjustment not a one-way 'push'.

Relevant programme: a strong focus on relevant programmes, notably those that can act soon and/or are facing key drivers for effective CSA inclusion (food security, climate change, etc.).

Dialogue: a wide range of means for making voices heard and for cooperation open to all levels and sectors, using recognised norms such as prior informed consent – and not restricted to technical issues.

Ownership: the entire mainstreaming process should be under the full responsibility of the stakeholders in question and not by external interests.

Subsidiarity: decisions concerning the integration of CSA into the Agriculture, Forestry and Fisheries programmes should be taken at the lowest possible level of public authority closest to the population concerned.

Use mainstream processes: use existing national, sectoral or local analytical/planning process as far as possible rather than attempt to run special CSA processes.

Transparency and accountability: information is made available on CSA/AFF programme links and dynamics, on decisions made and reasons why.

Sustainability: the process needs to be informed by potentials, stresses and limits (desirability *vs*. feasibility).

5.4 Strategic Actions/Priority Areas

The strategic actions to mainstream CSA into the Agriculture, Forestry and Fisheries (AFF) subsectors have been developed around the following:

- Climate Smart Agriculture policy environment;
- Capacity Development;
- Research and Technology Development;
- Resource efficient and resilient value chains;
- Advocacy and Communication;

- Financial Sustainability and;
- Monitoring and Evaluation.

6. IMPLEMENTATION OF THE CSA STRATEGIC FRAMEWORK PRIORITY PROGRAMMES

The following is an outline of key outputs and priority actions and programmes aimed at promoting the mainstreaming and implementation of CSA. These focus on the broad themes of:

- An enabling and coordinated policy environment;
- Capacity building and research; and
- Stakeholder engagement

6.1. Output 1: An Enabling and Coordinated Policy Environment

The South African Climate Change Response White Paper highlights the agriculture sector as a priority in terms of addressing climate change. The policy encourages mitigation and adaptation responses aimed at ensuring national food and nutrition security and addressing resource use efficiency and social equity. In strengthening the existing climate change policy regime, CSA specific policies, strategies and programmes should be formulated and integrated with current agricultural, forestry and fisheries policies and development plans in SA. The main goal under this thrust is to mainstream CSA policies and fully integrate these in current agricultural, forestry and fisheries development programmes.

Key actions at the policy level will be taken to tackle mainstreaming constraints relating to policy deficits, policy coordination, and policy coherence, and communication shortfalls. This means that South Africa, and specifically DAFF's policymaking must be multifaceted at addressing climate change, poverty, unemployment and inequality. This must involve drawing

from experiences from programmes such as LandCare.

CSA programmes must reflect the complex reality of smallholder farming, small forestry and fisheries businesses, where issues are not contained neatly in boxes labelled 'climate', 'environment', 'food security' or 'migration'. Issues often discussed in silos at the Departmental and Directorate levels are intertwined and integrated for the smallholder farmer, forester and fisher. DAFF's approach to CSA programme development must be holistic and aimed at addressing vulnerability taking advantage of existing efforts aimed at addressing social equality and cohesion, job creation, food security, and environmental concerns such as pollution.

The policy directions must be primarily aimed at reducing vulnerabilities and improving capacities to improve the prospects of adaptation choices and the ability to explore opportunities that arise. Some of these directions, especially those focusing on communication, research and monitoring, are cross-cutting measures and should be included in all strategies. For the Agriculture, Forestry and Fisheries sector, key policy directions advocated by this Framework can be characterized as follows:

- **Reducing vulnerability of the Agriculture, Forestry and Fisheries systems:** Providing greater focus on areas and subsectors that struggle to cope with current socio-economic challenges and climate change and variability. The primary focus here is to reduce major underlying causes of vulnerability;
- **Reducing and managing risks related to climate variability and change by promoting the implementation of specific adaptation options:** For example, promoting pest, disease and weed management practices, revising codes and standards for infrastructure and facilities (e.g., fishing vessels), introducing new crops, new fish varieties, planning transitions (such as developing alternative livelihoods, or financial and technical contingency plans) in areas where agriculture will have a limited role. This should also include actions aiming to alleviate major losses in agricultural, forestry and fisheries production due to climate variability and climate change (i.e. drought relief, insurance for crop losses due to hail etc.);

- **Enhancing elements of adaptive capacity:** Introducing new, flexible technologies, management strategies, insurance schemes and economic incentives that allow for adjustments based on impacts that may occur currently and/or in the future (targeting both the supply and demand side of agricultural production systems);
- **Exploring sector-specific opportunities and the feasibility of pursuing them:** These opportunities will arise in some agro-ecological regions because of milder weather and changing climate variability for the Agriculture, Forestry and Fisheries sectors. For example, expanding agriculture and suitable crops into areas that have not been used for production because of unfavourable climatic conditions (low temperatures, length of growing season, etc.); and
- **Promoting research, communication, institutional development and extension agencies:** Assist in changing management practices in the Agriculture, Forestry and Fisheries sector, for example, using climate projections, identifying linkages between impacts and adaptation, and drawing on lessons learned from other countries.

In following the above tentative policy directions, the focus should be on working with farmers, foresters and fishers and other key stakeholders in policy formulation, planning and implementation so that they are convinced that projected climate changes are real. They also need to be confident that the projected changes will significantly impact their enterprises so that they can be willing to change their management decisions and practices. This could be facilitated by evidence-based policies that translate monitoring outcomes into issues that matter to producers and managers (such as pest occurrence and water availability), and by communicating information effectively. In terms of the processes that help to transform these policy directions into actual policies and actions, coordinated measures at the national, sectoral and project level are required. As suggested in sections below, this must include *establishing institutional mechanisms* for guiding and implementing adaptation, *formulating policies* for developing capacities and adapting to climate change and other vulnerabilities or *reviewing existing policies* to take adaptation into account, *allocating budgets* for actual actions and *monitoring and evaluating* the effectiveness of the adopted policies and actions).

This Framework recognises and acknowledges that the prerequisites for progress in CSA

policy development include improving national and regional information related to climate change impacts; gathering and creating information on vulnerability to climate change, including current and future impacts; and connecting past data collected by meteorological offices with projections focused on future changes. At the different levels of governance these overall suggestions discussed in preceding paragraphs require specific actions as outlined in the following discussion.

Priority Actions

6.1.1. Build Capacity of State Actors and Stakeholders to understand and plan for climate change impacts and Climate Smart Agriculture

Concerted efforts will be key in conscientising stakeholders on the benefits of CSA. It is important to also build capacity of the stakeholders for advocacy, formulation, implementation and monitoring of CSA initiatives.

6.1.2. Invest in CSA Policy focused research

Implement a primarily on-farm, farmer-led research into CSA to create a sufficient and compelling body of knowledge, information and capacity (especially among farmers and their key partners) to inform CSA mainstreaming at policy and planning levels. Such research will help form the baseline information that will contribute to the CSA Strategic Framework Implementation and the Monitoring and Evaluation. This will also create opportunities for CSA mainstreaming whilst allowing DAFF to take stock of existing good practices (including traditional practices and indigenous knowledge), demonstrating the economic feasibility of those practices in different localities, and identifying what is needed to maintain and expand them.

6.1.3. Integrate CSA into existing Agriculture, Forestry and Fisheries sector policies and identify, design and implement CSA programmes

There are key adaptation policies areas on CSA that can be integrated with the current agricultural policies and these include:

- encouraging adaptive crop, forestry and fisheries development and farming practices;
- disaster risk management;
- irrigation and water resource management;
- conservation agriculture;
- watershed and land management;
- livestock management; and
- crop, forestry and fisheries and income loss risk management.

Likewise, there will also be mitigation policy pillars for CSA:

- GHG reduction in the AFF sector;
- Afforestation efforts; and
- Use of renewable energy, i.e. solar water pumps.

6.1.4. Focus on the food, water and energy nexus

CSA policy makers and all stakeholders must put more focus on the interlinkages between food, water and energy. The policy priority here would be to enable and improve the management of the complex links between water, energy and food systems. Understanding the connections between basic food demands and accessibility to water and energy is important when it comes to climate change and its impact thereof on the agriculture systems and livelihoods.

The challenge that must be overcome in this regard is that the water, energy and food systems are often treated independently. South Africa, like most other countries, has isolated

water, food, and energy policies. There is some evidence that policies that ignore the link between them can be inefficient and even counterproductive. The nexus approach can help transform isolated policies into integrated development plans which is so critical for countries with severe water stress like South Africa. It is important that, as part of CSA implementation, DAFF cooperates with other stakeholders to introduce initiatives that become a testing ground for the practical application of the nexus approach. An encouraging development is that the nexus approach has already been discussed by the Southern African Development Community in the water sector.

6.1.5. Promulgate and implement policies

The CSA policy development approach will be **Farmer-centred** - with government steering but not rowing the policy development boat. As already noted, CSA policies must be geared to increasing productivity, ensuring food security, economic growth and transformation, job creation and better livelihoods for communities while reducing the ecological footprint of the Agriculture, Forestry and Fisheries sector.

6.1.6. Involve stakeholders in policy processes

Involvement of stakeholders (despite time and diversity constraints) will be an integral part of CSA policy development, or integration into existing policies. In general, DAFF will ensure that, in general, stakeholders are involved in all stages of the policy development/integration, including:

- developing background materials at early stages of the policy development;
- creating public forums to discuss and comment on a draft strategy;
- keeping the draft policy documents open for comments after release;
- involvement of researchers, policy-makers, sector stakeholders, extension agents, producers and other experts in drafting and reviewing the policies and strategy; and
- involvement of extension agencies, Farmers, Forest and Fisheries groups, producer organizations and farmers to learn about best practices, and to test and disseminate

information within their networks.

In developing these policies or integrating CSA into the existing policy framework, DAFF will also harness the active collaboration of sister DAFF Directorates, GoSA Departments, and all levels of government in SA, FAO, among other developmental organisations. DAFF will encourage coordination and cooperation between fisheries and marine biodiversity sectors to ensure that climate change responses of the sectors provide win-win outcomes.

6.1.7. Integrate indigenous knowledge systems into CSA policy making and programme design and push its place into the forefront of both public and academic discourses

DAFF will actively seek to integrate indigenous knowledge systems into CSA policy making. This approach will recognise that African subsistence farmer and fishing communities have always interpreted and reacted to climate change and variability impacts in very specific, locally relevant, and creative ways, drawing on traditional knowledge as well as new technologies to find solutions, which may help them to cope with the impending changes. This approach also recognises that the perspectives of the indigenous people, the way they think and behave in relation to climate change and variability, as well as their values and aspirations have a significant role to play in addressing and managing climate change and its impacts.

6.2. Output 2: A strong Climate Smart Agriculture, Forestry and Fisheries sector anchored by coordinated, capacitated institutions and partnerships

The CSA Programme implementation will be effectively executed through capacitated and well-coordinated institutions. There is currently a need to strengthen inter-departmental and intradepartmental coordination on CSA issues. Lack of coordination translates into weak coordination between national, provincial and local government on CSA related issues. Limited inter-departmental and intradepartmental coordination on CSA is exacerbated by the

low capacity for CSA cross-sectoral planning and ineffective communication within and between Agriculture, Forestry and Fisheries components and between DAFF and other sector departments. Lack of coordination may be a result of overlapping mandates of different government institutions.

Institutionally, to progress in CSA mainstreaming into the Agriculture, Forestry and Fisheries subsectors therefore, the principal opportunity will be both working with and yet changing the mandates, capacities, behaviours and interrelationships of existing AFF sector institutions and CSA-related institutional initiatives at all levels. The first step in institutional building for CA mainstreaming will be the establishment (where they do not presently exist) of multi-stakeholder dialogue and innovation "platforms", where issues of CSA mainstreaming can be identified and prioritised. Existing structures, including those representing both subsistence and commercial farmers, at various levels will be leveraged towards this Agriculture, Forestry and Fisheries sector institutional building.

Secondly, institutional building for CSA mainstreaming will actively leverage on the existing partner institutions especially: research institutions, academic institutions, farmer cooperatives; farmer organisations; traditional authorities and institutions; community-based organisations; NGOs; schools and their governing bodies; and Community Property Associations (CPAs), among others with the intention of institutionalising CSA within their structures.

The third key action will be to capacitate the institutions so that they can effectively implement CSA mainstreaming. This will involve creating opportunities for access to resources including technical support and experiential learning. The strategic objective is that the requisite CSA and CSA-related institutional framework will be in place by the end of 2018, and this will enable the rollout CSA projects across the provinces.

Priority Actions

The following actions are recommended:

6.2.1. Build and leverage partnerships that act as effective CSA mainstreaming entry points and drivers

Partnerships between DAFF and other stakeholders will be leveraged as catalytic mechanisms that will help address market failures or failures in governance where neither the market nor government is able, on its own, to deliver public goods related to CSA or meet crucial social and CSA mainstreaming challenges. Effective partnerships for CSA mainstreaming into the Agriculture, Forestry and Fisheries sector programmes will need innovative incentives such as awards as well as public recognition for stakeholder involvement. Furthermore, value addition through partnerships for mainstreaming will be derived from shared expectations, clear role definition, negotiation and agreement among all those who will be involved. This will also involve using existing foras and platforms. To ensure that partnerships add value to the CSA mainstreaming processes, the following will be key:

- framing around mutual problems;
- moving informal to formal status; and
- integrating CSA-based institutions and key stakeholders (*e.g.* farmers' groups).

Presently, the trends on partnerships amongst DAFF stakeholders include:

- limited awareness on CSA and its inherent benefits;
- Lack of capacity amongst stakeholders to comprehend and implement CSA;
- Absence of incentives and limited resources; and
- High levels of risk perception and uncertainty on the benefits of CSA.

Key stakeholders/partners identified as critical to the success of mainstreaming are listed in **Table 3** below with related roles in CSA mainstreaming.

Table 3: Stakeholders and their roles

Stakeholder	Role
DAFF	Coordinate and support the Agriculture, Forestry and Fisheries sector CSA mainstreaming, capacity and awareness campaigns, project funding and partnerships. Internal monitoring and evaluation.
DEA	The focal point for climate change policy, research, negotiation and coordination processes.
DST	Spearheading the CSA research, innovation and technology development and uptake.
DRDLR	Support CSA linkages to land reform and rural development initiatives.
DSBD	Facilitate the involvement of small business in CSA policy and foras, and promoting innovation on technology involving small-scale subsistence farmers and agro-processing enterprises.
Provincial Government	Support policy formulation, stakeholder mobilisation, advocacy, resource access, rollout CSA mainstreaming and localised monitoring and evaluation. Ensuring active involvement of women, youth and people living with disability.
Private sector	Support CSA capacity development, value addition for production and services provision (input, equipment, capacity building).
State-Owned Enterprises	Support CSA related socio-economic intervention, innovation and resource access.
Research and academic institutions	Data collection, analysis and dissemination. Building the CSA Information, knowledge and Technology development. Building research capacity targeting youth and women.
Marketing agencies	Support CSA mainstreaming through creating a pull factor for production
Farmer Organisations	Engage with CSA policy formulation and support CSA implementation. Monitoring and evaluation
Farmers, Foresters and Fishers	Assess and adapt CSA practices in their localities. Experiment, draw lessons and improve agricultural productivity through CSA approaches.

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6.2.2. Establish and strengthen a platform for private sector and CSO engagement with national and provincial governments by end of 2018

CSA Status Review across the Agriculture, Forestry and Fisheries sectors indicates that there is a general lack of structured framework for private sector and CSOs to engage national and provincial governments on CSA issues. To this end, the following actions will be taken:

- Engage the private sector to identify opportunities for increased investments in CSA;
- Organize regular consultative meetings with the private sector and CSOs on the planning and implementation of the CSA Programme;
- Identify appropriate incentives to catalyse private sector and CSO investments in CSA activities;
- Implement advocacy activities on CSA Programmes to private sector and CSOs with a view to identifying areas for their participation; and
- Establish communication channels for consultations between private sector and CSOs in the programmatic planning and implementation of CSA activities at all levels.

6.2.3. Strengthen existing DAFF- Development partner coordination with a focus on a common country CSA Programme funding by 2028

As stated in the CSA Situational Reports, the CSA related initiatives at present are planned and implemented in silos with varied design, sponsorship, monitoring and evaluation systems. There is also weak ownership of many interventions at various levels of government. To address this, the following actions will be taken:

- Harmonize GoSA and development partners' investments in climate smart agriculture through a common national CSA programme;
- Tap on the existing technical support provided by organisations such the Food and Agriculture Organisations (FAO) as an example; and
- Engage donors such as the Government of Flanders who have interest on climate change programme funding.

3.2.6. Build the Capacity of CSA Institutions and Partners

The three-sectoral status reports showed that the potential CSA implementation gap is a concern. The studies showed that this implementation gap is caused by several factors, including lack of knowledge, poor project conceptualisation, design and insufficient appraisal and evaluation and lack of the necessary project management skills. To address this challenge, capacity building for implementation will be crucial from the beginning and appropriate support will be provided to CSA implementers.

From experience to date, AFF projects that have tried to integrate CSA have shown that even with increased investment (this being one of the key motivations for mainstreaming), many project members and other involved stakeholders do not have the absorptive capacity to deliver due to underlying capacity constraints. Lack of capacity explains why the seemingly good practices of planning for the CSA related projects have at times not yielded the intended benefits. In this regard, capacity-building actions will be supported targeting:

- Initiatives that develop and strengthen the capacities of new CSA-related institutions and communities to effectively absorb the anticipated increase in financial resources (including funding from the Green Climate Fund), increase in knowledge, demand for new project management skills, participatory, and leadership skills.
- Those that ensure that capacity to mainstream CSA exists at several different levels — systematic, institutional and individual. Such an approach will ensure that CSA mainstreaming efforts have systematic capacity (also known as the enabling environment or the societal level).
- Initiatives to develop policies, systems and tools to support capacity development within stakeholder organisations.
- Programmes that increase the number of trained scientists (including youth, women and people with disabilities) especially in the fisheries area (few scientists are trained here) and projects that increase opportunities for postgraduate training in CSA related areas.
- Initiatives that increase the capacity of government officials to engage in research and data collection on climate change and that increases their ability to formulate and implement evidence-based policies and programmes.

- Initiatives that enhance the capacity of officials to undertake timely and relevant assessments of the state of the marine environment and potential impact of climate change. This information must then be used to formulate informed decisions; to issue early warning notices; and to ensure that customized and targeted marine environment information products derived are readily available and accessible to policy makers and other interested parties.

6.3. Output 3: Increased investment in research and an expanded CSA Knowledge Base

South Africa's CSA mainstreaming programmes will require recent, accurate and relevant knowledge about weather patterns, health trends, relative vulnerabilities and other information that can be generated through well-coordinated and monitored research. This knowledge must be generated using multidisciplinary processes. Data generated should relate to information on the exact nature, intensity and rate of changes in climate during the coming decades in southern Africa broadly. South Africa therefore needs a sound science, robust technology base and human capital in climate smart agriculture.

Evidence from Situational Reports show that current climate smart agriculture, forestry and fisheries research is largely uncoordinated – making it exceedingly difficult to ascertain priority issues to the country. In addition, research results often do not reach users of the information such as policymakers, planners, and practitioners. Successful CSA implementation will require that CSA knowledge is generated, efficiently managed, and shared so that it can effectively inform CSA implementation. Thus, a repository of CSA data, climate models and information must be developed and managed.

In the very short term, CSA mainstreaming efforts should rely on many sources of relevant information, including farmer organisations and structures, national statistical services (StatsSA), academic and research institutions, and international networks. This includes studies that may have been commissioned by other stakeholders working in the Agriculture, Fisheries and Forestry sectors. Innovation information sharing platforms such as Facebook, cloud-based CSA knowledge ecosystem (CAKE), such as Wikipedia and EcoPort (which is

established in South Africa), that establishes, builds, maintains and improves a communal knowledge warehouse, for example, on some CSA technologies. The knowledge generated and the information collected must be effectively managed and communicated through modern foras such as social media targeting youth. The establishment of an open-source, open-society CSA knowledge warehouse is a priority. There is need to draw from south-south experiences on how technology has been used in the agriculture sector, particularly looking at China and India.

6.3.1. Create and establish a unified and strategic approach and mechanism to CSA research that would support the preparation and implementation of high quality CSA policies, programmes, and projects within the Agriculture, Forestry and Fisheries sectors

CSA research proposals must target priority issues such as increased water scarcity in agriculture. Resource-use efficiency must be strengthened by reducing duplication of efforts among researchers, and that the research outcomes are available to policymakers and practitioners. Additionally, the knowledge that will be gained through research would contribute to new CSA project initiatives of high quality that are resource efficient and competitive for financing both domestically and internationally.

6.3.2. Encourage and enable private as well as public sector R&D efforts focusing on the development of short-term and long-term innovative technologies

Efforts must be made for improved technologies and practices in crops, livestock and fisheries by producers. With high poverty and low-income levels, there is presently limited use of agricultural inputs by smallholder producers. This is coupled by low use of Integrated Water Resource Management (IWRM) principles and best land management practices for sustainable production even in the face of the emergence of new crop and livestock diseases and pests. Examples of such technologies are those that can help stimulate the growth of urban and peri-urban agriculture as a source of food and income which, in the SA context, is under-exploited.

In terms of irrigation for instance, there is presently an overdependence of agriculture on poor and erratic rainfall (rain-fed agriculture) especially amongst smallholder farmers. Across both commercial and smallholder farmers, there is inefficient use of existing irrigation systems and therefore low productivity on existing irrigation systems accompanied by high water wastage and poor water management. Furthermore, there is inadequate and un-coordinated information in irrigation research, science and technology.

Innovative technologies that improve soil health and rehabilitate degraded lands will be vital for CSA mainstreaming. Status Reports indicated that nutrient depletion, loss of biodiversity, land degradation and soil erosion are endemic. Low adoption of CSA technologies such as solar and practices is glaring at smallholder and household levels. Where they exist, most CSA initiatives and activities are of pilot nature with weak collaboration of relevant actors to ensure CSA uptake and up-scaling. Despite efforts implemented by the GoSA through flagship programmes as LandCare, unsustainable land use is still the norm rather than the exception.

6.3.3. Support efforts and programmes

The following could help propel CSA efforts:

- Increased funding in CSA research targeting various institutions including the CSIR, ARC and others;
- Increase public expenditure into CSA research, project formulation, piloting and implementation through the national fiscus;
- Incentivize private sector investments in CSA research and development and innovations;
- Establish some multi-directorate CSA research coordination fora within DAFF to steer CSA research efforts.

6.3.4. Spearhead the identification of CSA Research Priority programmes

The following research areas will be considered:

a. **Site-specific nutrient management and balanced nutrient application:** for instance, there is a need for a good understanding of site-specific performance of conservation agriculture which could help in addressing climate change relative to the:
    - application of modest amounts of mineral fertilizer per site-specific recommendations;
    - improvement of nutrient retention through efficient use of organic and inorganic nutrient sources; and
    - properly timed or split application of mineral fertilizers to the community.

b. **Water harvesting and use management:** technologies for efficient and cost-effective rainwater harvesting and storage ought to be developed and community-based watershed management shall be pilot-tested in selected areas.

c. **Soil and water conservation**: implementation of highly efficient micro-irrigation systems, harnessing water conservation structures on rivers, waterways, water-efficient management practices using localized irrigation, and the adoption of irrigation technologies on smallholder farmers' fields. Soil and stone bunds are structures commonly built to control run-off and thus increase soil moisture and reduce soil erosion. Inherently, this increases productivity.

d. **Food value chain development:** It is therefore important to understand how climate change will impact the value chain from inputs to consumers to assist agricultural business to make right decisions to address these impacts. Breeding and screening for climate-resilient crop, plant and fish varieties and other for early maturity; tolerance to drought, submergence and salt; limited as well as excessive moisture; low glycaemic index; and high carbon sequestration.

e. **Developing new livestock and fish breeds** not only for climate-resilience and sustainable productivity, but also for improving farming practices that reduce GHG emission.

    - **Developing a system for accurate assessment of fish stocks** and research on

the social and economic costs of implementing climate smart approaches.

- **Alternative aquaculture species** and species that will benefit from climate change.
- **Conduct a risk assessment study for all marine fish species** to allow for the sensitivity of each species to climate change to be identified. The Agulhas and Benguela systems play a critical role in the marine fishery yet there is very little understanding of how climate change will affect them and subsequently the marine fisheries. It is therefore important to research on the possible effect of climate change on the marine fisheries, *viz*., and the Agulhas and Benguela systems.

f. It is of paramount importance for both policy makers and researchers in South Africa to look at and address the following questions to future scaling-up of agroforestry contribution towards food security and climate change mitigation.

The questions are:

- What tree species work best under given site conditions?
- Which tree-crop-site combinations are characterized by synergistic interactions, which ones by trade-off?
- What extension methods are most effective for promotion of climate –smart agroforestry systems?
- Which agroforestry systems support healthy, ecologically functional landscapes?
- How can ecosystem service delivery through agroforestry systems be optimized?
- How will some agroforestry species respond to climate change?
- Are adaptation benefits from agroforestry greater than those of alternative land

uses?

- How, if at all, can smallholder farmers benefit from carbon payments?

6.3.5. Support research into indigenous knowledge systems with the following objectives

a. Understanding how South African traditional communities have, over generations, continued to rely on their own indigenous knowledge systems in observing the environment and dealing with natural hazards.
b. Gathering and understanding the vast body of knowledge which traditional communities, particularly those in hazard prone areas, have collectively generated on disaster prevention and mitigation, early warning, preparedness and response.
c. Understanding indigenous perceptions of climate change and their preferences of strategies towards adaptation.
d. Understanding and clarifying how indigenous knowledge could be effectively integrated into policy formulation, mitigation and adaptation programme design.

6.3.6. Work with relevant DAFF directorates to enhance the capacity of Extension and Advisory Services to understand, communicate and implement a CSA Focused Technology Diffusion Innovation System

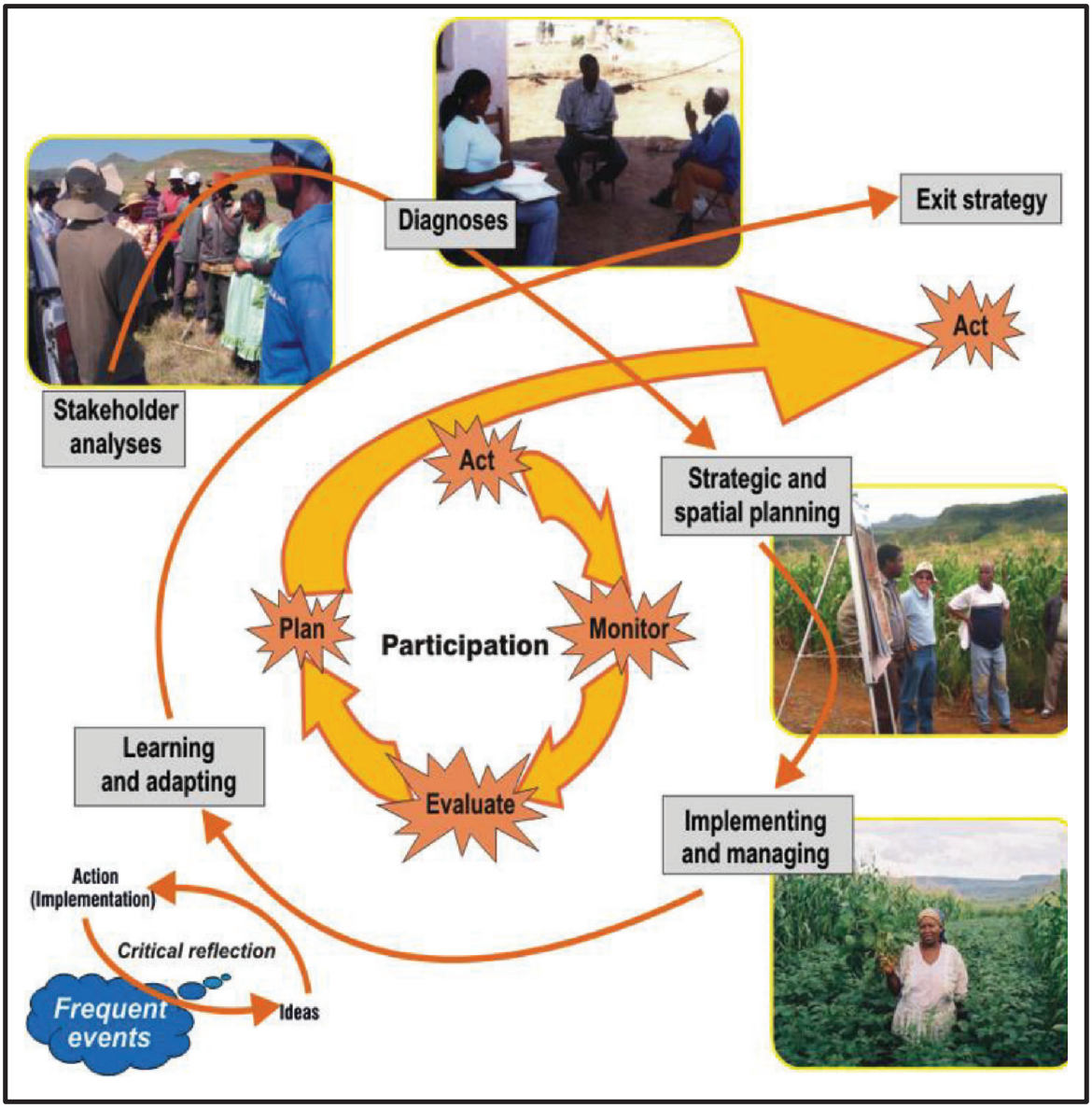
The adoption of CSA principles, practices and technologies by farmers, foresters and fishers will be the key activity for, and a key indicator of, CSA mainstreaming into the Agriculture, Forestry and Fisheries sector. This uptake will be driven by an effective farmer, forester, fisher mobilisation through an effective innovation process that goes beyond the traditional Transfer of Technology (ToT) approach. International experiences as well as work done by the SA ARC and its PDA partners, and the methodologies and approaches they have developed over the last few years questioned the key assumptions of the “transfer of

technology model" (TOT), on which the Extension System in South Africa had been based. In the ToT model, new technologies developed by researchers are disseminated by agriculture extension officers.

This linear (TOT) model of research and extension has been shown to be inappropriate/largely ineffective because it separates smallholder production systems from the domain of the wider rural livelihoods, such as off-farm income generation, social and cultural aspects, resource access. These factors significantly influence farmers' decision-making processes about agricultural practices. Because the model overlooks the complex and highly dynamic situation found in rural communities, this then accounts for low adoption and use of new technologies developed by research and disseminated by extension officers.

As an example, after testing various options of promoting Conservation Agriculture (one of the CSA technology tools) to smallholder farmers in a LandCare project in South Africa, an approach which builds on the basic premise that the development, adaptation and scaling out of technology innovations is predominantly socially constructed by farmers within their local farming situations was recommended. Importantly, action research to empower farmers (especially smallholders) to adapt and adopt new practices in their own realities is key. The South African Agricultural Research Council (ARC) in collaboration with DAFF and provincial agricultural authorities successfully tested this practice through implementation of CSA technologies in Conservation Agriculture (CA) projects within the LandCare Programme. The Department of Rural Development and Land Reform (DRDLR) also made progress in using the approach in the CA Technologies' (CAT's) projects. Currently stakeholders such as Grain SA are using the same approach to implement the CA Farmer Innovation Programme (FIP) to promote CA among all grain farmers in South Africa. In this programme signs of addressing CSA challenges can be found. The technology innovation process model is illustrated in **Figure 1** below:

Figure 1: The farmer-centred innovation systems model for sustainable land management (Smith, 2006)



Source: Smith 2006

In line with the innovation system outlined above, CSA Extension work will focus on:

- the mobilisation and empowerment of all key Agriculture, Forestry and Fisheries sector

stakeholders (multi-stakeholders), especially small-scale producers, by recognising, using, and strengthening farmers, foresters and fishers' ability to be innovative.

- continuous process of communication, interaction and exchange of knowledge (social learning) among farming, forestry and fishing communities and other actors to shape the CSA technological and social innovations.
- Implementing the following key processes: stakeholder identification and mobilisation; diagnosis of CSA farming practices systems, awareness, season-long training, farmer-led experimentation and social learning (in innovation platforms).
- Farmer to farmer, Forester to Forester and Fisher to Fisher Climate Extension Services. Working with mainstream agriculture extension officers, sharing of CSA technologies will be done through farmer-to-farmer extension. The advantage of this approach is that the social and economic benefits of CSA technologies are readily understood by fellow farmers.

6.4. Output 4: A resource efficient and resilient value - chain based on technology innovation

6.4.1. Support initiatives that fast track and consolidate CSA initiatives

The implementation of the following initiatives will be key in reducing GHGs from the fishing sector:

- Reduction of fishing effort. Continue to reduce Demersal trawler fleet that has been used over the years.
- Limiting the use of fuel and popularise several techniques already used in the SA such as

  (a) having vessels change to fuel efficient engines and electrical generators

  (b) demersal trawling shifting to new mesh materials, which reduce drag.

  (c) fitting vessels with governors to limit maximum speed.

  (d) having fishing taking place preferably on fish aggregations closest to the processing ports

  (e) cooperative fishing takes place were a few search vessels make experimental catches and notify the bulk of the fleet when aggregations are detected; and

  (f) introducing an incentive to have small scale fishers replace the demersal trawler fleet that are old.
- Installation of carbon dioxide stripping equipment.
- Utilisation of renewable energy sources such as wind and wave power in coastal areas although this may limit fishing effort or decrease aquaculture areas in coastal areas, possibly affecting the surrounding critical natural habitats such as estuaries.
- Develop, incentivise, and switch to more fuel-efficient capture methods (Low Impact and Fuel Efficient (LIFE).
- Ensuring fish are caught using minimal possible amount of fuel with minimal impact on the environment.
- Installation of carbon dioxide stripping equipment in fish factories.

6.4.2. Support initiatives that increase productivity through the adoption of improved adaptive technologies

The following actions will be undertaken:

a. Identifying and updating existing climate smart technological packages relevant for each Agriculture, Forestry and Fisheries subsector;
b. Introducing diversified and improved crop varieties (high yielding, short duration, disease and pest resistant and nutrient fortified);
c. Strengthening surveillance of agricultural input trade; and
d. Improving agricultural mechanisation by adopting appropriate machinery and equipment.

6.4.3. Increase productivity of livestock enterprises through adoption of improved adaptive practices

The following actions will be undertaken:

a. Introducing improved livestock locally adaptive breeds;
b. Promoting the adoption of low emission technologies;
c. Improve nutrition through supplementation, forage and fodder conservation;
d. Providing adequate disease surveillance and control, and regular vaccination campaigns;
e. Making livestock drugs available to small scale producers - increase community managed drug stores and assisting small scale producers to improve animal health, including disease prevention and management by enhancing the strength of veterinary institutions, policies and services;
f. Encourage the use of medication that draws from local indigenous knowledge;
g. Capacitating small-scale producers to understand and implement proper nutrition regimes to make their livestock production systems more efficient. Proper nutrition is imperative for achieving high reproductive efficiency in animals and protecting them from diseases. This also makes animal health interventions more effective.

6.4.4. Encourage and support projects that increase productivity of cultured fish

The following actions will be undertaken:

a. Apply existing fish culture technological packages throughout the country;
b. Use of appropriate fish culture technologies;
c. Strengthening the fish health inspectorate and research to identify emerging diseases related to climate change.

6.4.5. Support efforts and encourage initiatives that increase area under efficient renewable energy powered irrigation

The following actions will be undertaken:

- Increase the use of renewable energy in irrigation systems;
- Build technical capacity to establish and maintain renewable energy innovations; and
- Increase area of irrigated land within the smallholder sector.

6.4.6. Support programmes that improve water resource use efficiency of existing irrigation systems

The following actions will be undertaken:

- Promoting the development and diffusion of appropriate efficient small-scale irrigation technological packages.
- Building the capacity of extension officers on irrigation and water management technologies and skills to enable them undertake irrigation extension, participatory methods of dealing with farmers as well as market extension.
- Undertaking comprehensive management needs assessment of existing large-scale irrigation schemes.
- Building the capacity of water users associations in agricultural water management to improve water use efficiency.
- Conducting studies on the irrigation potential and identify sites in various river

floodplains and underground water sources for micro-irrigation systems.

- Building the capacity of farmers in the installation, operation and maintenance of recommended water efficient irrigation technologies.
- Facilitating the procurement and delivery of irrigation equipment through suppliers who can provide technical backstopping and training of local artisans.
- Promote local manufacturing of water efficient technologies targeting the agricultural sector.
- Integration of livestock water needs in all new irrigation designs.

6.4.7. Work with relevant stakeholders to increase the number of smallholder farmers that adopt climate smart soil management technologies and practices

Incentives to promote the adoption of CSA will include:

- Promote enhanced private investment into climate proofing initiatives;
- Incentivise for energy efficiency;
- Direct access to loans or other financial products to encourage adoption of CSA practices;
- Incentivise for renewable energy;
- Encourage output and results-based payments linked to CSA practices;
- Encourage risk-sharing mechanisms;
- Disincentives for high fuel consumption;
- Taxes and tariffs;
- Removal of taxes that favour activities with a high carbon footprint;
- Tax breaks for low-carbon and mitigation activities;
- Potential for national government subsidies for farms implementing CSA initiatives;
- Promote products that use rely agricultural practices with the aim of reducing sector emissions; and
- A favourable tax incentive, such as the 10-year tax-free policy for products that are produced from reversion to CSA based production; subsidised loan policy for CSA efforts; Payment for Ecosystem Services (PES).

6.4.8. Encourage and support the design and up-scaling of existing CSA women and youth focused programmes and projects along the whole Agriculture, Forestry and Fisheries sector value chain

Targeted actions must be undertaken that include:

a. Campaigns to draw women and youth involved in the Agriculture, Fisheries and Fisheries sector into CSA-based practices.
b. Ensuring learners from senior primary schools are participating and implementing CSA principles in school gardens and promoting and advocating CSA as a preferred approach in the curricula at various levels.
c. Ensuring that women and youth involved in agriculture, forestry and fisheries have integrated CSA principles in their production systems.
d. Negotiating for and help create a funding mechanism with leading institutions including SEDA/DBSA/NYDA to provide start-up funding and capacity development for women and young entrepreneurs who are passionate to implement CSA-aligned food production and processes.
e. Initiating advocacy campaigns to have women and youth-related CSA projects considered during IDP, LED and Agriculture, Forestry and Fisheries sector planning processes.
f. Identifying existing agricultural schools and incentivise them to initiate CSA practices in their agricultural enterprises.
g. Working with the Education and Training sector to provide CSA subject material for integration of CSA into the school curricula.
h. Setting up bursary schemes for learners who are interested to take CSA-based training.
i. Setting up CSA-directed agricultural, forestry and fishing co-ops for youths and women.
j. Lobbying for farmer, forestry and fisheries development programmes to target, attract,

increase and incentivise women and youth involvement in CSA programmes.

k. Working with AgriSETA and DAFF's training Directorate to integrate CSA into existing training programmes targeting youths, women and people with disabilities.

l. Identifying youths (below age 35) who are already engaged in farming, forestry and fish production and encourage them to be CSA champions.

6.4.9. Support programmes that rehabilitate degraded land and coordinate actions with flagship programmes such as the LandCare Programme

CSA practitioners are encouraged to:

a. Develop and implement sustained awareness programmes on CSA addressing soil health and land degradation challenges;
b. Facilitating the development and implementation of provincial CSA Programmes annually to rehabilitate degraded lands; and
c. Promoting the dissemination and adoption of CSA technologies and practices at the farm level across the country through Provincial CSA Programs

6.4.10. Strengthening and up-scaling collaboration with existing relevant flagship DEA and DAFF programmes to enhance integration of CSA practices in conservation and rehabilitation of water catchment areas and contribute towards increasing tree cover

The following actions were identified:

a. Protecting and restoring water catchment areas through integrated watershed management;
b. Promoting best-management practices for natural resources management to improve and maximize net benefits for the farmers;
c. Monitoring trends in land use management;

d. Promoting upstream water catchments conservation to reduce sediment yields into the river systems to reduce sediment loads to the banks;
e. Develop and implement management plans for ecosystems to encourage sustainable use and adaptation to climate change challenges;
f. Promoting soil and water conservation;
g. Promoting bee-keeping and other non-wood forestry products as a forest conservation measure;
h. Developing a business model for ecosystem management to facilitate payment for ecosystem services;
i. Promoting integrated rangeland management that seeks to address emanating climate change related challenges;
j. Undertaking natural resources accounting for ecosystems;
k. Identify agro-forestry species for different agro-ecological zones and support farmers to increase tree cover on their land; and
l. Encourage Public-Private Partnerships in conservation of water and natural resources.

6.4.11. Encourage the adoption of best practices such as those identified in the FAO Code of Conduct for Responsible Fisheries (CCRF) (FAO, 1995) and the ecosystem approach to fisheries (EAF)/ ecosystem approach to aquaculture (EAA)

Practitioners will be supported to take the following steps:

a. Implement an ecosystem-based approach to fisheries that is integrative and considers the equitable needs of all stakeholders in the aquatic ecosystem.
b. Strengthen the newly created special task group within the Directorate of Marine and Coastal Management to integrate the ecosystem-based approaches to fisheries management.
c. Enforce the implementation of the Code of Conduct for Responsible Fisheries developed by the Responsible Fisheries Alliance (RFA) to ensure sustainable harvesting of marine resources. It addresses issues around pollution, by-catch, discarding waste and over-fishing.

d. Encourage the fishing sector to voluntarily develop their fishery specific Code of Conduct to encourage collaboration between crew and management in the utilization of fishery resources and to ensure compliance with laws and regulations in the fishing industry.
e. Expand culture-based fisheries (CBF) projects to all small dams focussing on tilapia, (*Oreochromis mossambicus)* that can easily be bred in hatcheries and then stocked in the small dams.
f. Partner with civil society organisations (*i.e*. the SA Sustainable Sea Food Initiative (SASSI) to capacitate communities to understand and implement new CSA approaches to prioritise resources and management actions).

6.4.12. Support initiatives that increase the production of freshwater aquaculture and marine fisheries

These initiatives include:

a. Considering the relocation of fish farms: Rising sea levels may inundate some aquaculture farms close to the shore and it may be necessary to relocate these farms. Particularly, this is will probably affect abalone farms.

b. Increase the farming of warm water species (*e.g*. Tilapias and catfish): *Oreochromis mossambicus* and *Clarias gariepinus* are the most widely cultured warm water species in South Africa. The optimal growth temperatures for *O. mossambicus* is between 28 and 30°C and for *C. gariepinus* is between 27 and 30°C. Presently, one of the main limitations to the culture of both these species in SA is the lack of suitable sites with the requisite temperatures. Climate change and variability may lead to an increase in the culture of these species as more suitable sites become available.

c. Strengthen fish health inspectorate within DAFF

d. Build capacity of fisheries institutions on the management of capture fisheries focusing on better-integrated systems, more efficient feeding, culturing of new species, stock management, and storage.

e. Increase youth and women involvement and control in the fisheries value chain.

f. Assist fishers to access higher value markets to offset reduced yield.

6.4.13. Work for the Agriculture, Forestry and Fisheries to increase investment in integrated production systems

Efforts will involve:

a. Assisting small-scale producers in the Agriculture, Fisheries, and the Forestry sector implement integrated production systems

b. Assisting smallholder farmers to practice integrated crop and livestock systems, at various scales (on-farm and area-wide) to increase the efficiency and environmental sustainability of both production methods.

c. Assisting smallholder farmers diversify their income sources by adopting agroforestry practices as part of their agricultural systems. This will also help to

prevent soil erosion, facilitate water infiltration and diminish the impacts of extreme weather.

6.4.14. Encourage and support the development and introduction of new products and processes across the Agriculture, Forestry and Fisheries value chain and minimize high post-harvest losses

Most agricultural commodities, especially those produced by small scale producers, are sold in their raw form and are thus bulky, lower value, with short shelf lives and inconvenient to use. Limited value chains development, disjointed value chains with regards to most agricultural, forestry and fisheries commodities and limited shelf life of some value-added products plus poor distribution and marketing are poignant challenges. Additionally, low levels of local market penetration by smallholder producers, low capitalization of bulk traders, poor grading and standardization system, inadequate volumes with the required specifications and quality to supply the international market are other additional constraints. Further, limited capacity to fully comply with international sanitary and phytosanitary standards (SPS), prohibitive regulatory and marketing barriers to regional trade are key concerns. Notably, external niche markets of various products are not fully exploited. Other challenges include inadequate value addition of agricultural produce and inadequate markets and marketing infrastructure.

In addressing the above challenges, the following solutions are recommended:

a. Provinces supported to develop new commercially viable products (crops, horticultural crops, livestock and fisheries). This will be realised by:
   - Identifying existing value addition technologies and incentivizing the private sector to promote them and innovate;
   - Promoting value addition on various readily available products at a local level;
   - Establishing links to input and output markets and service providers (strengthen value chain) while ensuring households derive food utilization benefits.

b. Developing efficient pilot value chains for selected commodities in each agro-ecological and aquaculture zones by:

- Establishing provincial agricultural hubs, particularly in rural areas, for value chain development and backstopping.
- Identifying and building the capacity of actors in value chain processes.
- Undertaking advanced market feasibility studies to promote demand for selected high-value commodities.
- Facilitating linkages to markets for the selected commodities.
- Diversify livelihoods of fishing communities to reduce impacts of yield variability.
- Assist in the adoption of flexible capture strategies to allow for change in fish distribution and weather warning systems to reduce dangers of fishing.

c. Increasing marketed agricultural and fisheries output by small-scale producers
   - Creating agricultural, livestock and fish commodity hubs in partnership with the private sector.
   - Facilitating capacity building of small-scale producers on demand and market driven production.
   - Designing and launching a market promotion programme for import substitution commodities.
   - Working with supermarkets, hotels and restaurants to participate in selected commodity value chains with a smallholder production base.
   - Reviewing regional and international trade regulations and protocols to promote flexible, market-friendly and transparent trading.
   - Linking producers to external high-value niche markets.
   - Building the capacity of producers on international trading dynamics.
   - Developing the branding of SA small-scale produce for regional and international markets.

d. Increase export of non-traditional agricultural and new fisheries commodities by small-scale producers through the following actions:
   - Identifying successful lead private sector firms with access to assured markets and apply viable models of linkage with smallholders;
   - Designing sustainable programmes to support the certification of

smallholders/producers for export markets; and

- Capacity building of farmers on selected non -traditional agricultural commodities.

e. Develop and improve the grading and standardization systems of agricultural commodities:
   - Developing and implementing grading and standardization systems for agricultural commodities that do not have grades and standards; and
   - Promoting the adoption of grading and standardization systems for all agricultural commodities for both domestic and export markets.

f. Improve and increase food storage and distribution by taking the following actions:
   - Investing in improved appropriate storage facilities and technologies along the value chain.
   - Training producers, processers and marketers in post-harvest management as well as food safety.
   - Providing regular market information (deficit/surplus areas) to improve distribution of agricultural commodities/food stuffs.
   - Facilitating establishment of marketing centres in rural areas with the appropriate infrastructure to enhance transportation of agricultural produce.
   - Linking small-scale producers in each Province by feeder roads to various marketing centres and highways.
   - Increase the capacity of food processing units (especially those established by women and youth) to produce quality products in larger quantities.

g. Enhance commercial sector storage capacity for agricultural and fisheries products by:
   - Strengthening the warehousing receipt system and link producers to the commodity supply chain;
   - Rehabilitating existing warehouses, cold storage facilities and silos and establish public-private-partnerships management;
   - Supporting private sector to invest in food processing (including abattoirs) as well as

value addition, packaging and branding; and

- Facilitating linkages with relevant service providers and markets (inputs and outputs).

h. Enhance small holder/small scale capacity to store produce through:
   - Enhancing small producers' capacity to deal with postharvest pests; and
   - Supporting small holders and other small-scale producers to store surplus produce.

i. Expand the strategic food reserve to include all appropriate agricultural and fisheries products and establish strategic feed/grazing, fishing reserves by
   - Expand the strategic food reserve to include all appropriate agricultural foodstuffs; and
   - Establish strategic feed/grazing reserves.

6.4.15. Increase crop and livestock weather-indexed insurance with an emphasis on smallholder farmers, foresters and small fisheries

Climate change impacts will include low incomes and high incidence of poverty amongst small players the agriculture sector, and it create difficulties for small-scale farmers and fishers to bounce back after experiencing extreme weather events related climate change and variability. Although applied, traditional approaches to risk transfer and risk management are no longer adequate. This is coupled by inadequate knowledge dissemination on the importance of agricultural insurance in changing climatic conditions. There are also inadequate/limited insurance products especially for small-scale producers in the South African market place.

The following actions will be taken:

- Develop and implement varied innovative index-based agricultural insurance packages for crop, livestock and fisheries value chains;
- Invest in the agro-meteorological infrastructure to support index-based agricultural insurance;

- Enhance the capacity of micro-finance institutions to act as agents to deliver innovative crop and livestock index-based insurance packages;
- Raise awareness within the insurance industry of extreme weather and climate risks and communicate actions and opportunities;
- Undertake farmer education to address their concerns regarding insurance products with a view to gain their trust; and
- Explore government re-insurance to support insuring high-risk smallholder farmers.

6.5. Output 5: A CSA Advocacy and Communication Strategy that enhances the understanding of CSA, builds consensus on issues, and stimulates stakeholder action

The decisions and processes of mainstreaming CSA into the Agriculture, Forestry and Fisheries (AFF) Programmes, like most change processes, may create opposition, and apathy, depending on how it will affect different groups and individuals and how these groups or individuals are mobilised and involved. As efforts are made to mainstream CSA into the Agriculture, Forestry and Fisheries programmes therefore, neutralising potential opponents and/or winning over the undecided will be just as important as finding champions for the CSA mainstreaming efforts.

Extensive efforts to enhance public awareness and national understanding of CSA will be undertaken. CSA mainstreaming will aim to purposefully change the way policy-makers, organisations and farming, forestry and fishing communities view their natural resource assets.

Communicating CSA and sustainable development concepts to the general population will be challenging especially because natural resource management issues may be considered a domain of government, and this may delay the participation of non-state actors. SA's diversity of culture and official languages will also increase the budget burden of awareness campaigns. At other levels, natural resource management issues and CSA may be viewed by some as a barrier rather than an opportunity to economic development and food security priorities. Consequently, this may cause resistance towards CSA-mainstreaming messages.

Considering the above, the CSA mainstreaming proposition must be conduction persuasively targeting target groups, in ways that create incentives for CSA advocates and the broader AFF stakeholder groups to respond positively. The focus of CSA mainstreaming communication will therefore be on the integration of CSA into Agriculture, Forestry and Fisheries development outcomes. Advocacy for CA mainstreaming will aim at bringing to the forefront South African specific evidence needed to convince key players at high critical levels. Completed and on-going CSA research and projects done in South Africa and elsewhere, and those done through other programmes can yield such evidence.

6.5.1. Develop and roll-out a CSA mainstreaming communication strategy

The strategy will take cognisance of the many factors in the South African farming, forestry and fishing contexts that may potentially act as barriers to communication, including the diversity of languages, the media multiplicity, and diverse communication infrastructure and platforms. **The communication strategy will use a variety of awareness approaches** that translate theory into practice. The approaches will include the following:

- Demonstration (pilot) projects;
- Exchange visits;
- Policy briefs;
- Market creation and integration;
- Utilisation of indigenous knowledge;
- Tailored awareness materials; and
- Foras such as conferences.

Mass media also use different formats, such as short features, news coverage, documentaries and discussions. Actions that enhance awareness and self-knowledge, such as tree planting, will be encouraged and implemented. Demonstration projects, competitions and awards for good practice, trade shows and exhibitions will all be incorporated as part of raising awareness of CSA. Internet-based platforms will be used, especially in relation to CSA youth

oriented programmes. Weather SMS services via mobile phones will be utilized as an effective channel for CSA adaptation/mitigation information and advisory services.

CA mainstreaming will also identify champions who will be used as platforms for awareness creation. These will be in the form of individual farmers, CA-related institutions (*e.g.* agricultural schools), or projects or other prominent individuals. Education and awareness will be extended to the traditional leaders and it will be important to investigate ways in which religious institutions can play a role in rural areas promoting the use of locally tested adaptive measures in response to climate change and variability. Importantly, farmers need help, and are looking for easily accessible one-stop source of information and advice on adaptation and mitigation technologies and practices that could help improve productivity. Sources of climate change information and advice on adaptation and mitigation technologies and practices must be accessible to farmers.

Use existing platforms such as the Biennial Conference on Landcare to promote CSA. **This** must be complemented by exhibitions, talk shows. In particular, the Talk shows will stage some inspirational young speakers who will share their experience and knowledge on Forestry, Biodiversity and Climate Change issues. Another initiative could be the Young Agriculture/Foresters/Fisheries School programme aimed at educating participants on how to preserve natural resources through climate smart initiatives.

6.6. Output 6: A diverse funding base to build a climate resilient investment programme

The successful implementation of the CSA strategy in the Agriculture, Forestry and Fisheries sector will be ensured by defining its funding mechanism and identifying approaches of getting broad, sustained support and strong ownership from key stakeholders. As climate change mitigation and adaptation strategies must be implemented for long-term climate-resilient investment needs. Financing options specifically targeting CSA are still limited at international, regional and national levels. This necessitates a strategic use and combination of existing

funding sources. The international climate finance options are:

- Financing mechanisms directly under the UNFCCC (*i.e.* Global Finance Fund (GCF));
- United Nations (UN) Organizations or programs (*i.e.* FAO, UNEP and UNDP);
- Multilateral development banks (MDBs) (i.e. World Bank and the African Development Bank);
- Bi-lateral public financing channels;
- Compliance and voluntary carbon markets; and
- Domestic funding sources will come from the annual budget allocation from parliament, domestic donors and the private sector.

The identification of funding sources from traditional (*e.g.*, government, regional and international donors, *etc*.) and non-traditional sources (*e.g*., foundations, philanthropy, private sector, *etc*.) and other innovative resource mobilization approaches will be the key thrust with the aim of building a diverse and secure funding base for CSA programme and project implementation within the AFF sector. CSA must not be treated as an "add-on" approach. The government of SA in partnership with donors must champion CSA.

6.6.1. Integrate mitigation and adaptation measures into current agriculture, forestry and fisheries planning and investment plans

CSA investment programmes must focus on improving livelihoods and income to provide incentives for smallholder farmers to invest in CSA. To ensure that investments are sufficient to make the transition to CSA, financial mechanisms are needed to blend and coordinate funding from different sources, including public, private, agricultural development and climate financing. CSA requires coordination, among concerned agencies across different sectors at central and local levels.

6.6.2. Enhance the capacity of DAFF staff responsible for CSA planning to effectively engage with the budgetary planning framework and processes

In South Africa, as is the practice globally, the Government prepares budgets outlining both the sources and planned uses of revenue. Allocations are made according to competing priorities, including those concerning natural resource management. The budget priorities and allocations must be objective and beneficial in addressing the challenges of poverty, unemployment and inequality, including the marginalisation of women. This means that analytical planning, negotiation and lobbying skills become important in this process, in which government departments and programmes compete for a portion of the national budget. For instance, South Africa utilises the Medium-Term Expenditure Framework (MTEF) way of budgeting. With this approach, government budgets are drawn up, based on policy decisions and with a longer view for the future. Using the MTEF, government budgets are usually prepared not only for the forthcoming year but also for the subsequent two to five years. It is therefore very important that the champions of CSA mainstreaming know this budget cycle and the instruments used and that they engage in these processes.

6.6.3. Promote the inclusion of a CSA related funding allocation in key poverty reduction and farmer/forester/fisheries development and empowerment programmes of the DAFF

Specific programmes to be targeted will be the:

- Comprehensive Agricultural Support Programme (CASP);
- *Fetsa Tlala* National Food Security programme;
- Mechanization programme; and
- Education and Training Directorate, amongst others.

6.6.4. Mobilise stakeholders and other partners to source resources targeted towards CSA mainstreaming into the DAFF programmes

These will include:

- Research institutions (local universities, think tanks, etc.);
- DoE (curricula related resources);
- SETAs; and
- Other private players (equipment importers and manufacturers).

6.6.5. Utilise National and International funding mechanisms and opportunities

The table below shows potential areas that could be considered for resources aimed at implementing CSA programmes:

Policy	Financing Source	Financing Mechanism
PES	Domestic Budget	Results- or activity-based disbursements focusing on CSA initiatives. Expansion of the current programmes being implemented by government and aimed at incentivise investments in environmentally sound practices (for example the Mexican PES programme for hydrological services).
	International climate finance; public sector	Support from performance-based international finance for Nationally Appropriate Mitigation Actions (NAMAs) (if there is a direct mitigation benefit); Reducing Emissions from Deforestation and Forest Degradation (REDD+) (if there is a link to avoid emissions from deforestation or enhancement of forest carbon stocks); adaptation (if there is an adaptation or food security benefit).
Carbon Markets	Private resources; national markets; voluntary	Direct payments to beneficiaries by carbon market buyers or aggregators.
	Private resources; international markets; regulated	Direct payments to beneficiaries. Support from buyers who want to invest in corporate sustainability or who have a compliance target that can create opportunities to address climate change challenges.

Loans	Domestic budgets	Disbursements to smallholders via intermediaries. Provision of concessional loans from the government to smallholder farmers who implement climate proof and sustainable agricultural practices.
	International loans	Disbursement via government agencies or private intermediaries (*e.g.* local banks).
Grant	Domestic budgets	Disbursements to farmers or intermediaries. Grants covering the transition to sustainable and low carbon activities. Support for the development of local capacity to get ready for a shift towards CSA benefitting agricultural practices.
	International grants	Support for extension services, public services or private activities that create an enabling environment to promote CSA practices.
PPPs in supply chains	Public and private resources	Transition cost subsidies from private or public partners.

6.7. An incentivised and driven CSA system characterised by strong stakeholder commitment

6.7.1. Support and work for the introduction of policies that formulate financial incentives at the level of the individual farmer

Incentives to promote the adoption of CSA will include:

- Promote enhanced private investment into climate proofing initiatives.
- Incentivise for energy efficiency.
- Direct access to loans or other financial products to encourage adoption of CSA practices.
- Incentivise for renewable energy.
- Encourage output and results-based payments linked to CSA practices.
- Encourage risk-sharing mechanisms.
- Disincentives for high fuel consumption.
- Taxes and tariffs.

- Removal of taxes that favour activities with a high carbon footprint.
- Tax breaks for low-carbon and mitigation activities.
- Potential for national government subsidies for farms implementing CSA initiatives.
- Promote products that use rely agricultural practices with the aim of reducing sector emissions.
- a favourable tax incentive, such as the 10-year tax-free policy for products that are produced from reversion to CSA based production; subsidised loan policy for CSA efforts; Payment for Ecosystem Services (PES).

6.7.2. Utilise insurance or guarantees sourced from both public (national and international) budgets and the private sector to encourage adoption of CSA measures

The financing mechanism would include:

- Provision of guarantees or insurance against loss of harvest related to the changed practices; and
- Guarantees that allow access to finance.

7. MONITORING AND EVALUATION

The implementation of this framework will be promoted and managed by the Directorate Climate Change and Disaster Management in the National Department of Agriculture, Forestry and Fisheries in collaboration with other units both with the department, other departments and spheres of government. Monitoring and evaluation will be key drivers of CSA mainstreaming into the Agriculture, Forestry and Fisheries subsectors. M&E systems will be strengthened to make them more results-oriented and suitable for internal and external reporting on progress made in CSA integration, including identification of relevant indicators that contain consistent information for all the main subthemes. DAFF will work towards a more comprehensive and comparable CSA in the Agriculture, Forestry and Fisheries Programme reporting system that contains consistent information for all the main sub-themes and that

goes beyond mere funding allocation and expenditure data. Stakeholders will be involved in the development of the M&E system with a view to agreeing on a reporting system to be applied by all stakeholders.

Quantification or qualification of indicators is the big question that must be tackled in considering and deciding on the monitoring and evaluation approach for CSA mainstreaming. The debate is whether indicators should be quantitative or qualitative or a mixture of both. It has been noted that quantification does have its own limitations, particularly considering that it is not always possible to measure all human experience, particularly that relating to the adoption of innovation processes that centre largely on attitude change and behaviours. This Framework recommends that a mix of quantitative and qualitative indicators and benchmarks (negotiated through a consultation process with stakeholders involved at each level of mainstreaming) must be used to as part of efforts to integrate CSA into the AFF Programme. However, what is obvious is that when deciding on indicators, the choice to use qualitative indicators allows everybody to form an opinion on the grading of such indicators and does not necessarily require extensive data collection and understanding. Such subjectivity promotes community buy-in to a process that could discourage participation if it was overly dependent on data collection.

It is important that the M&E framework for CSA mainstreaming establish baseline and target indicators for sustainable CSA mainstreaming into the Agriculture, Forestry and Fisheries Programmes. However, as is highlighted in the Situational Status Reports, baseline data are difficult to obtain. Despite this constraint, this framework proposes the following spectrum of general outcomes of CSA mainstreaming into the Agriculture, Forestry and Forestry - they range from upstream to downstream changes:

Tentative actions:

- Increased participation and interaction between the new CSA-mainstreamed Agriculture, Forestry and Fisheries Programmes and natural resource management stakeholders;

- Integrating CSA into policies and associated political will/leadership;
- Providing the resources to enable the mainstreaming of CSA linkages, through budgets and fiscal instruments;
- Improved domestic and foreign resource mobilisation for CSAFF Programme investments;
- Strengthened institutions and capacities to mainstream CSA into the Agriculture, Forestry and Fisheries Programmes;
- Sustained behavioural change by individuals, institutions and society, in both public and private domains to promote CSA mainstreaming;

This framework recommends the use of benchmarks or incremental achievement approaches in target setting. Moving up the incremental scale provides political mileage and therefore a stimulus for action, as progress can be clearly demonstrated and the next level can be reached much more easily. Alternatively, because the AFF Programme plans are public goods and transparent, failure to move to the next level could be politically more damaging. For communities, incremental targets allow for much gradual learning and familiarity with the process and interest is generated by the government's wish to publicise its successes. The key to this incremental performance target setting has the aim of clearly setting out and agreeing on what is needed for achieving each grade at the beginning of the process, and to realise that everyone must work to make CSA mainstreaming targets a reality.

8. COORDINATION OF CSA AND INSTITUTIONAL ARRANGEMENTS

This Framework proposes a National CSA Steering Committee, involving key departments such as the Department of Environmental Affairs and others that will be responsible for CSA policy guidance and inter/intra-sectoral coordination. This should be in place by the end of 2018. This coordinating mechanism will be a public-private multi-stakeholder platform

involving DAFF, DEA, DWS, DST, the Treasury, and the Department of Monitoring and Evaluation, Farmer organisations and private sector AFF actors. The Steering Committee will be responsible for policy guidance, inter/intra-sectoral coordination, advice on resource mobilization, quality control and mechanism for international collaboration on CSA. Stakeholders will decide on the nature and from of institutions needed to spearhead CSA. As part of this rollout of the coordinating mechanism the following will be done:

- **Establish Provincial CSA Steering Committees and Coordination Units or Focal Points** to coordinate and implement the CSA programmes at provincial and local level. The provincial steering committee will be led by the provincial agriculture department in collaboration with other stakeholders. This structure will be responsible for policy guidance, inter/intra-sectoral coordination and mechanism for international collaboration on CSA. Efforts must be made not to duplicate structures, and where possible existing structure must be utilised to achieve CSA goals.
- **The CSA Provincial and CSA District Coordination Units** will be charged with the implementing CSA activities at the Provincial and District levels (local government) respectively including, communication of the CSA programme and stakeholder's consultation process, conflict resolution and grievance management, finance management and any other duties relevant to CSA implementation process.
- **A CSA Technical Working Group** will be established to provide scientific advice to the National Steering Committee and other relevant stakeholders. The National CSA Steering Committee will appoint, from amongst its members, a CSA Technical Working Group with expertise in Agriculture, Crops, Livestock, Fisheries, Forestry, and Meteorology. The TWG will play a key advisory role for the National CSA Steering Committee and will be responsible for scientific oversight and implementation of the CSA Programme. This structure will draw from existing institutions including think tanks and academia.

With the coordinating mechanism in place, it will be necessary to:

a. Develop and implement an inter-departmental communications strategy with respect to inter-departmental coordination on matters relating to CSA;

b. Introduce a biennial joint planning and review session of the National CSA Steering Committee. This can be aligned with existing foras that bring together diverse stakeholders in the agriculture sector such as the LandCare conference;
c. Build capacity of national and provincial and local government staff, with focus on extension officers, in CSA and cross-sectoral planning and implementation;
d. Build CSA policy review and analytical capacity at all levels;
e. Strengthen the CSA planning, implementation, monitoring and evaluation at the national, provincial and local levels; and
f. Establish a framework for disseminating CSA programmatic planning and implementation as well as annual reports and studies and receiving feedback at all levels.

8.1 Roles and Responsibilities

Level of Government	Organisation/Stakeholder	Roles and Responsibility
National Government	Government Ministries (DAFF, DEA, DRDLR, DWA, National Treasury,	Formulation of policies and guidelines. Identification of programmes, implementation and monitoring. Stakeholders and resource mobilisation.
	Research institutions and academia	Formulate Research agenda
Provinces	9 Provinces of South Africa	Provide strategic direction, monitoring and evaluation. Building capacity.
Local Government		Integration of CSA into local level strategic frameworks. Promoting implementation of CSA. Build capacity of local stakeholders.
Farmer Organizations, Cooperatives	AGRISA	Promote CSA implementation at farm level. Strengthen evidence-based research through farm level experience. Advocacy on CSA.
NGOs/CSOs		Mobilize local stakeholders to implement CSA. Promote knowledge sharing and capacity building at various levels. Lobbying stakeholders to invest in CSA.

Development Partners	The Government of Flanders, UNDP	Provision of resources, learning opportunities and technical capacity.

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