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# DRAFT CONSERVATION AGRICULTURE POLICY

*Department of Agriculture, Forestry and Fisheries.*

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## Acronyms

APAP	:	Agricultural policy action plan
CA	:	Conservation Agriculture
CARA	:	Conservation Agriculture Resources Act
CASP	:	Comprehensive Agricultural Support Programme
DAFF	:	Department of Agriculture, Forestry and Fisheries
FAO	:	Food and Agricultural Organisation
GHGs	:	Green House Gases
HEI	:	High External Input
IS	:	Innovation Systems
LEI	:	Low External Input
MAFISA:		Micro Agricultural Financial Institutions of South Africa
NGOs	:	Non-Government Organisations
NT	:	No Till
NWA	:	National Water Act
OECD	:	Organisation of Economic Co-operation and Development
PES	:	Payment for Environmental Services
PM&E	:	Participatory Monitoring and Evaluation
R&D	:	Research and Development
SDGs	:	Sustainable Development Goals

## **Definitions of terms**

**Agro-ecology:** The study of the interactions between plants, animals, humans and the environment within agricultural systems.

**Agro-ecological approach:** A practice that takes into account of the interactions between plants, animals, humans and the environment within agricultural systems.

**Agro-ecological zones:** Geographical areas exhibiting similar climatic conditions that determine their ability to support agriculture.

**Biodiversity:** A variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable.

**Carbon market:** A market that is created from the trading of carbon emission allowances to encourage or help countries and companies to limit their carbon dioxide (CO<sub>2</sub>) emissions.

**Carbon sequestration:** A process of transferring carbon dioxide from the atmosphere into the soil through crop residues and other organic solids, and in a form that is not immediately reemitted.

**Conservation agriculture:** Farming practices which use three key characteristics: 1. minimal mechanical soil disturbance (i.e. no tillage and direct seeding); 2. maintenance of a mulch of organic matter covering and feeding the soil (e.g. straw or other crop residue including cover crops); and 3. rotations or sequences and associations of crops including trees which could include nitrogen-fixing legumes.

**Conventional farming:** Farming methods which involve physical manipulation of the soil, the use of synthetic chemical fertilizers, pesticides and herbicides.

**Farmer Field School:** A participatory and interactive approach to social learning, based on the concepts and principles of people centred learning.

**Food security:** A the state of having reliable access to a sufficient quantity of affordable, nutritious food.

**Degradation:** A decline to a lower condition, quality, or level.

**No till:** Farming where the soil is left relatively undisturbed from harvest to planting.

**Minimum till:** A tillage method that does not turn the soil over.

**LandCare:** A community based and government supported approach to the sustainable management and use of agricultural natural resources.

**Participatory Monitoring and Evaluation:** A process through which stakeholders at various levels engage in monitoring or evaluating a project, program or policy, share control over content, the process and results of the monitoring and evaluation (M&E) activity and engage in taking or identifying corrective actions.

**Payment for Environmental Services (PES):** Payments to compensate for actions undertaken to increase the levels of desired ecosystem services.

**Reduced tillage:** A practice of minimising soil disturbance and allowing crop residue or stubble to remain on the ground instead of being thrown away or incorporated into the soil.

**Rehabilitation:** The act of restoring something to its original state.

**Sustainable:** Relates to or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged.

## 1 INTRODUCTION

In Sections 24 and 27 of the Constitution as well as in the Bill of Rights, provision is made for an enabling environment that addresses the right of citizens to a secure environment that is conducive to sustainable human enterprise and food security.

The South African National Development Plan (Vision 2030) on the rural economy recommends: “To deal with the consequences of industrialised agriculture it demands that serious attention is paid to advances in ecological approaches to sustainable agriculture. This includes greater attention to alternative energy, soil quality, minimum tillage and other forms of conservation farming.” The system and approach of Conservation Agriculture is key in advancing adopted sustainable development goals on sustainable agriculture, climate change adaptation and mitigation and land degradation neutrality.

The Strategic Plan for 2011-2015 of the Department of Agriculture, Forestry and Fisheries (DAFF) and the Agricultural policy action plan (APAP) state that an agro-ecological approach to agriculture will be a key area of focus. Other sectoral legislation, such as the Conservation of Agricultural Resources Act, 43 of 1983, entrenches sustainable use of natural resources. The strategic plan of the DAFF also places sustainable natural resource management at the centre of its strategic goals.

As part of a growing body of scientists, practitioners and stakeholders, Blignaut *et al* (2014) argue that conventional farming systems are not sustainable, expressing the need for more sustainable agricultural production systems. These systems should focus on fostering synergies between agricultural production, conservation and enhancing rural livelihoods. As an alternative to conventional farming systems, Conservation Agriculture (CA) is gaining acceptance in many parts of the world (Derpsch *et al.*, 2010; Derpsch, 2008; Dumanski *et al.* 2006; Fowler, 2006), as a proven sustainable and cost-effective production system.

CA refers to an agricultural management system based on the simultaneous application of three principles: minimum mechanical soil disturbance, an organic soil cover throughout the year and the use of crop diversity, including rotations and associations. These principles enhance natural biological processes above and below ground and involves interventions where soil tillage is reduced to an absolute minimum. The use of external inputs such as agrochemicals and mineral supplements are applied at an optimum level, at quantities and in a manner that does not interfere with or disrupt biological processes. However, CA leads to improved ecosystems’ functioning that helps to reduce the use of and dependency on external inputs.

CA constitutes a production system that is not only ecologically sustainable but also economically feasible and socially acceptable (Blignaut *et al*; 2014, Du Toit 2007; Dumanski *et al.* 2006). CA is based on optimising yields and profits and not maximising yields *per se* whilst exploiting the soil and agro-ecosystem resources (Dumanski *et al.* 2006).

Blignaut *et al* (2014) further postulate that CA can be conceptualised as a stepwise and gradual process that includes production stages that usually start with minimum or No Till (NT) with high external inputs (HEI) evolving most often to CA using low external inputs (LEI) (see: Figure 1).

Cited by Blignaut *et al* (2014), Derpsch (2001) defines minimum (or reduced) tillage, as “... a tillage system which includes the minimum soil disturbance needed for crop production”. Minimum soil disturbance is achieved through specialised equipment in order to allow for the soil structure to

recover and organic matter to increase. NT is described as disturbing the soil as little as possible; by using tine planters, disc planters or a combination of tine and discs (Govaerts et al. 2009). It may also be achieved with animal draught equipment or hand tools. The principle of retaining soil surface cover entails retaining between 30% and 80% or more of crop residue on the surface cover.

Stage	1	2	3	4	5	6	7
Type of farming system	Conventional tillage	Minimum or Reduced tillage	Conventional No tillage  (Direct seeding equipment using tines). Production system lacks adequate soil cover and sound crop rotations.	<b>Conventional Zero tillage</b>  (Direct seeding equipment using discs).  Production system lacks adequate soil cover and sound crop rotations.	<b>CA<sub>HEI</sub></b>  (NT using high quantities of external artificial inputs (i.e. fertiliser, herbicides, pesticides).  Production system has adequate soil cover and sound crop rotations.	<b>CA<sub>LEI</sub></b>  (NT using low quantities of external artificial inputs (i.e. fertiliser, herbicides, pesticides).  Production system has above 80% soil cover and sound crop rotations.	<b>Organic CA</b>  (NT using no external artificial inputs (i.e. fertiliser, herbicides, pesticides). Production system has adequate soil cover and sound crop rotations.
	Level of sustainability	Not sustainable					



**Figure 1: Typical crop production systems on a sustainability gradient (Adapted from Blignaut et al 2014).**

CA facilitates sustainable crop production intensification; it improves soil health, promotes biodiversity and increases biological regulation functions and risk minimisation. CA has been reported to enhance water use efficiency through increased water infiltration and enhanced water holding capacity due in part to crop residues left on soil surface and improved soil structure. The inclusion of cover- and ley crops speeds up the realisation of these multiple benefits, but also contributes to weed and pest control and facilitates the integration of livestock.

Although CA was primarily developed for the sustainable production of grain and other field crops (Midgley et al. 2015), the underlying principles of sound integrated management of natural resources for long-term sustainability of production equally apply to farming in the livestock and horticultural sub-sectors, with context specific adjustments. In livestock for instance, Blignaut et al (2014) note that feedlot cattle are more profitable under CA than the conventional production system, mainly due to faster and more efficient growth. In fruit production, all three of the principles are applicable to and should be adapted to each situation. Perennial crops such as orchards for example, with a productive life-span of at least 25–30 years, benefit tremendously with the use of

cover crop species in the rows, apart from minimum or no disturbance of the soil and permanent soil cover.

The potential value of CA is emphasised by recent Green Economy- and skill development-accords on growth path strategies that recognise the importance of agriculture for emancipation of the rural poor and unemployed. Furthermore, Government's medium term strategic framework identified several outcomes through which DAFF contributes directly to attaining Sustainable Development Goals (SDGs) that deal with decent employment through inclusive economic growth, supporting vibrant, equitable and sustainable rural communities contributing towards food security for all and to protect and enhance environmental assets and natural resources. Apart from this commitment from Government, a CA policy contributes to the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods. This declaration is a set of new goals showing a more targeted approach to achieve the agricultural vision of shared prosperity and improved livelihoods on the African continent.

It is worthwhile to note that CA and its principles should be tailored and adapted to suit any specific farming situation. Although Organic Conservation Agriculture (OCA) is portrayed to be the most ideal sustainable agricultural production system (Figure 1), this policy focuses on CA with low external inputs (LEI) as proven realistic goal. It is premised on a vision, formulated as a national initiative, positioning CA as a mechanism in a national effort of attaining food security through a sustainable food production system, thus enhancing national security. Developing a CA policy is therefore a logical and necessary process that distils a broader commitment towards a more sustainable agricultural production system.

## **2 PROBLEM STATEMENT**

Serious questions about the sustainability and efficiency of current agricultural production systems in South Africa arose over decades. Irrespective of scale, current farming methods have a high environmental demand and are largely dependent on external inputs, thus leading to the depletion and degradation of natural resources (Blignaut et al., 2015; Midgley et al., 2015; Knot, 2014; Decker et al., 2011; Burger, 2010; Compton et al., 2010; Le Roux et al., 2008). According to Le Roux et al. (2008), the average soil loss in areas under grain crops in SA is 13 ton/ha/yr. This is much higher than the natural soil formation rate and implies that almost 3 tons of soil is lost per hectare for every ton of maize produced every year. In the interest of sustainable and economically viable agriculture and food security, the paradigms of agriculture production and management have to change (Blignaut et al., 2015).

CA has been identified as a viable system of production that addresses these concerns in terms of sustainable and cost effective practices (Midgley et al. 2015), especially in the light of adaptation to and mitigation of climate change effects. In the South African agricultural system, adoption of CA is evident in the horticulture, livestock and field crop sub-sectors (Blignaut et al., 2014) but it is desirable to promote its integration into the entire system. Adoption of CA among especially commercial farmers in South Africa is increasing, but there are still knowledge, cultural, social and legislative barriers that limit adoption. Government has yet to institutionalise CA in its programmes and technical interventions whilst CA research is also inadequately supported.

This policy addresses the urgent need to adapt conventional farming systems which are compromising agricultural production and resulting in alarming natural resource degradation (Midgley et al., 2015). This degradation is threatening food security, basic human rights and

ultimately, national security. In addition, a lack of coherence in legislation within the agricultural production and rural development policy environment, is evident. This strengthens the argument for a CA policy. Furthermore, climate change, scarce water resources, rainfall variability (extremes), food quality and a growing population and food demand, add urgency to the need for a switch to a more sustainable system. Therefore, a publicly coordinated approach to facilitate CA adoption is required. This would deal with the current policy-level confusion on the type of agriculture that would characterize a green economy, in terms of sustainable production intensification, whilst growing South Africa's natural- and human-capital.

Although CA uptake levels are still relatively low in South Africa (Midglet *et al.*, 2015), the use of CA is more prevalent in commercial than small scale agriculture. This can perhaps primarily be attributed to the very complex smallholder farming system and the factors influencing it, such as land tenure, lack of resources and infrastructure, etc., demanding a special approach and skills to empower and adapt these farmers and their systems to CA. There is a general dearth of skills to initiate and facilitate such innovation systems approaches, of which Farmer Field Schools are the most prominent. Different types of farmers in terms of scale and gender face different challenges in CA adoption and a sound policy will allow for redress, reducing reliance on outdated legislation such as the Conservation of Agriculture Resources Act (CARA). A CA policy will consolidate agricultural policy in promoting sustainable land-use.

The inclusion of CA within a sound policy environment would create an enabling environment for South African producers to curb increasing production costs, mitigate threats to soil health, water quality and biodiversity whilst increasing productivity and efficiency (Midgley *et al.*, 2015). Both water scarcity and soil degradation are key pressing issues affecting South Africa's agricultural sector. Research on various aspects of CA indicates promising results in terms of water-use efficiency, soil health parameters, drought resistance and sustained production (Blignaut *et al.* 2015; 2015; ARC, 2014).

Commercial farmers across the country have to some extent embraced the principle of minimum soil disturbance through various forms of reduced tillage practices (such as stubble mulching), but have mostly not moved to no-till or complete CA systems. On average, South Africa's CA adoption rate among grain producers is estimated between 20 and 30%, with the highest proportion of farmers (>70%) registered in the Western Cape Province. The adoption rate among grain producers in KwaZulu–Natal is estimated at between 50 and 60%, while it ranges between 10 and 40% in the Free State, Mpumalanga, Gauteng and North West Provinces. The lowest proportion adopting grain producers is estimated in the Eastern Cape (5%), followed by the Northern Cape (6.5%) (Blignaut *et al.*, 2015).

Because of the multiple benefits that both CA systems generate in terms of yield, sustainability of land use, income, timeliness of cropping practices, ease of farming and eco-system services, the area under CA systems has been growing exponentially in many countries, largely as a result of the initiative of farmers and their organisations (Derpsch 2008, Derpsch *et al.* 2010).

Table 1 : General Overview of Conservation Agriculture / No tillage adoption

Country	Area under No-Tillage (ha) 2007/2008
United State of America (USA)	26.593.000

Australia	12.000.000
Canada	13.481.000
Brazil	25.502.000
South Africa	368.000

Source: Derpsch, R. and Friedrich, T., 2008, unpublished data.

**Table 2: Area under No-Tillage by Continent**

Continent	Area (Hectare)	% of Total
South America	49.579.000	46.8
North America	40.078.000	37.8
Australia & New Zealand	12.162.000	11.5
Asia	2.530.000	2.3
Europe	1.530.000	1.1
Africa	368.000	0.3
World Total	105.863.000	100

Source: Derpsch, R. and Friedrich, T., 2008, unpublished data.

### 3.1 VISION FOR CONSERVATION AGRICULTURE POLICY

It is envisaged that CA will transform South African land use systems towards a sustainable food production system, adopted by the majority of farmers, which will increase the food security status of South Africa and its citizens, whilst reducing vulnerability to food scarcity and the related risk to national security.

### 3.2 PURPOSE, OBJECTIVE AND EXPECTED OUTCOMES

The **purpose** of this policy is to guide widespread adoption of CA in agricultural production systems.

The **objective** of the CA policy is to promote and establish ecologically and economically sustainable agricultural systems that will increase food security levels and address associated national security risks.

Adoption of CA will lead to the achievement of **outcomes**, based on the following measurable indicators:

- An increase in soil organic matter.
- Reduced green-house gas emissions due to less external inputs and more carbon sequestration.
- Increased water infiltration that reduces runoff, soil erosion and sedimentation, and improves surface and groundwater levels and quality – land rehabilitation.
- Increased commodity and livestock production, performance and resilience.
- Compliance to environmental legislation.
- Improved biodiversity and ecosystem functioning.
- Lower production costs

### 3.3 PRINCIPLES FOR POLICY IMPLEMENTATION

- **Conservation Agriculture is a social construct**

Thus, the implementation of this policy is founded on the principles of conserving, utilising and increasing human, social and natural capital in order to ensure farmers' empowerment, address social inequity and balance economic, social and environmental objectives. This has implications for the setting of the research agenda, technology transfer approach how awareness is created and impact evaluation conducted. It results in the recognition of endogenous and indigenous knowledge, land users as key innovators and the need for knowledge sharing across the sector and society is promoted.

- **Soil is a living material**

This gives recognition of the soil as a biologically active, living system, whilst respecting and responsibly utilising biodiversity to ensure sustainable natural resource management, through efficient input use and mechanization options.

- **Cost of inaction and continuation of current system is high**

Investing in human, social and natural capital must involve the funding of appropriate research, knowledge sharing, an improved training curriculum, infrastructural development, market development and technical skills development that promotes sustainable production systems and marketing options.

### 3.4 STRATEGIC SIGNIFICANCE

Given the challenges of a growing food demand, climate change and the overall limited agricultural potential of the country, CA constitutes a strategic production system option that has been proven to increase the productivity of land and labour in a more sustainable manner. It does so by maintaining soil health and cover and thus reducing erosion, nutrient and water loss. It also results in less weed and pest problems. A main feature of CA is its emphasis on efficient external input use, which reduces production costs, while sustaining or even increasing yields, leading to a substantial increase in net farm income (Midgley *et al.* 2015; Blignaut *et al.*, 2015; 2014). As a more efficient production system, it provides opportunities for different types of farmers on the smallholder - commercial farmer continuum.

According to the FAO (2009; 2014), CA is an approach to managing agro-ecosystems for improved and sustained productivity, increased profits and food security while preserving and enhancing the resource base and the environment. Generally, South African agriculture related policies, as mentioned, aim to enhance agricultural production, food security and agrarian reform, health and food safety.

Lastly, CA contributes to carbon sequestration through an increase in soil carbon, whilst mitigating GHG emissions (Knot, 2014) - also a strategic government priority.

### **3.5 POLICY OPTIONS [MEASURES PROMOTING CA USE]**

#### **Resource allocation, capacity building and partnerships**

The State should provide visible, substantial support to government and private initiatives that promote sustainable or agro-ecological approaches and systems addressing relevant and/or priority issues, such as restoration of degraded land; the reduction of external input usage, etc. The state should hence promote sustainable grazing management that limits topsoil loss and disturbance, enhance forage production and cover and maintain key forage species diversity – in line with CA principles. A good example of such an initiative is the National LandCare Programmes. The focus of Government's mechanization programmes should be to provide better access to specialised CA equipment, such as no-till planters and sprayers. Assisting State beneficiaries in this manner will enhance CA adoption as capital investment is a major constraint to CA uptake.

Government should invest substantially in appropriate public and private sector training initiatives that relate to CA farmer-centred innovation and implementation. A good example is the CA Farmer Innovation Programme at Grain SA, involved in CA promotion and awareness creation for both smallholder and large scale farmers. Government should encourage adaptation of current agricultural curricula towards sustainable agriculture, as existing curricula at most education and training institutions are biased towards high input agriculture to the peril of agro-ecological approaches, such as CA.

State support programmes to smallholder agriculture should focus on sustainable systems in general and on CA production systems specifically. Support should include training of extension (training of trainers). State interventions, including land reform and the Comprehensive Agricultural Support Programme (CASP) should be reoriented towards incentivising CA implementation. Similarly, micro-financing schemes such as Micro Agricultural Financial Institutions of South Africa (MAFISA) should favour farmers who practice CA. The increase in LandCare funding will enable the advocacy and implementation of CA practice.

#### **Providing incentives**

The State should provide producers with incentives to adopt CA practices by rewarding farmers for managing their land sustainably leading towards improved ecosystem services. There are current examples of such incentive schemes, such as payment for ecosystem services (PES) and carbon markets. This transparent system of conditional payments to voluntary providers of environmental services, to be administered by the state, through local farmer-centred innovation platforms, should also be designed and marketed extensively, in order to promote adoption.

The Government should develop and provide tax rebates to companies manufacturing CA equipment, and it should introduce a reduction on import duties on CA equipment. This will serve as an incentive for companies to develop CA compliant physical capital.

Carbon tax measures should also be introduced for firms and farmers for using external inputs and emit Green House Gases (GHGs) beyond an agreed upon threshold. Carbon tax should be associated with agro-inputs proven to release GHG emissions. A list of such inputs can be

approved by a panel of technical experts, using data supported by relevant research. This will in the long-run discourage farmers from using such inputs.

### **Investing in Research**

The State should substantially increase its investment in research and in particular in adaptive CA research, specific to agro-ecological zones. Investment in agriculture in South Africa is lower than in any other country in the world, according to the recent OECD report on SA (2015). According to StatsSA data obtained in the 2007 census, Investment in Agriculture, Forestry and Fisheries constitute  $\pm 1.6\%$  of all public spending, whilst spending on agricultural R&D in 2007 was just below 7% of total R&D expenditure. This investment has barely improved. This policy urges for a substantial increase in research investment in CA. Whilst targeted on station or in-vitro research on specific problem areas through the ARC, NGOs and Universities is important, on-farm, farmer-led research should be seen as a priority that the State should invest in. Research and economic analysis that illustrates the impact of CA on carbon sequestration, soil health, productivity and resilience could be particular focus areas.

Government should actively seek to invest in interactive, farmer-centred innovation systems (IS) approach to research as farmers have always been the implementers and developers of CA practices. In support of this, the development and publishing of case studies that illustrate the impact of CA implementation should be encouraged. Hence the research agenda should be driven by farmers, with all other interested stakeholders involved. Government should invest in CA capacity by supporting short to long-term innovation processes and events, which will include farmer-led experimentation, learning workshops, conferences and farmers' days, study groups, farmer field schools and farmer-to-farmer mentorship. These activities are vital in ensuring participation and innovation that compliment research and extension and promote collaboration and information flow between stakeholders. Using farmers' fields for experimentation and demonstration as part of participatory learning and action research is suggested, as this is where innovation typically takes place.

### **Creating awareness**

Government should invest in a multi-stakeholder national awareness and education campaign on the benefits of CA. This campaign should be built on CA's contribution to the green economy, food security and rural development - and effectively, national security. The contribution of CA in improving soil health, resilience, biodiversity and productivity, which ultimately improves food and fodder production should be emphasised. Linking CA to a brand for sustainable production (e.g *Farming for the Future*) would establish awareness and create incentives which might establish a price differentiation and premium for products generated through CA. Producers and their organisations should be targeted, but ultimately, since CA contributes to society's wellbeing, such a campaign should also target consumers. The State should support and invest in a functional, collaborative and scientific monitoring and evaluation programme to track the implementation of the CA policy as well as the impacts thereof. The particulars are described in the M&E section of the policy.

### **Strengthening regulatory tools**

The need to advance regulatory mechanism relating to cultivation of virgin land and cultivation of land requires paradigm shift to minimise carbon loss and soil disturbance associated with land tilling. This is intended to build proactive mechanisms, continuous technical land assessment and rehabilitative directives to protect soil resources of the country for current and future generations, while ensuring productivity of the sector.

## **Gender focus**

The state should support and promote a particular focus on gender recognition and entrenchment as women face particular, distinctive challenges in agriculture: They typically operate smaller enterprises, keep fewer livestock, typically of smaller breeds, and earn less whilst facing a greater workload. They often have less access to education, information and extension services; use less financial services; and are less likely to purchase inputs. Simply put, women in agriculture have less access than men to productive resources and opportunities. It is therefore argued that as part of the CA policy, dedicated public support measures should target female farmers and their requirements. Such a focus is strongly supported by gender research that indicates significant gains from a dedicated investment. The FAO research indicates a return of up to 30% from such a dedicated investment whilst women also spend more on food, health, clothing and education than men. Such an investment would therefore in the long-run increase human capital formation and economic growth. Investment in labour saving technologies is a particular example that would facilitate the participation of women in the market. Awards for innovative farmers, should be dealt with in both a male and female category, as an example of policy initiatives specifically targeted at female farmers. Others might include targeted financing and support (AgriBEE Fund; CASP) and Fetsa Tlala.

## **Implications**

Improved channelling of public and private funding for CA should result in awareness and appropriate capacity development of all stakeholders, increased implementation and sustainable production. Ultimately the area under CA and the number of farmers using the system will increase as farmers become aware of the benefits of CA, and are supported in implementing the system. The shift towards CA will require investment and the equipment for farmers, which will not only require a paradigm shift, but also long term commitment. It is difficult to promote CA in smallholder farming systems under communal land tenure. Special attention will be required to introduce successful approaches and CA farming systems models in these settings.

## **3.6 LINKAGES TO OTHER POLICIES**

The proposed policy is in line with other agricultural policies and programmes of government, especially the recent policy initiatives developed and adopted during this last decade, such as the National Development Plan (NDP), New Growth Path (NGP), Industrial Policy Action Plan (IPAP), NEMA Act, the Agricultural Policy Action Plan (APAP) and the Integrated Growth and Developmental Plan (IGDP) - all these policy initiatives focus on sustainable systems in stimulating rural development. A wider analysis illustrates that the CA policy is also aligned with the New Partnership for African Development (NEPAD) and the Malabo declaration. The policy aligns perfectly with the Land Care programme which focuses on land resource management through the promotion of sustainable land use practices. Furthermore, the policy fits with the National Water Act (NWA) which promotes sustainable water management, sustainable catchment management and the protection of water resources.

This CA policy is also in alignment with the national white paper on climate change which has as objectives to effectively manage inevitable climate change impacts through interventions that build and sustain resilience and to make a fair contribution to the global effort to stabilise greenhouse gas (GHG) concentrations. The policy is also aligned with the South Africa National Environmental Management Act (NEMA) and the Conservation of Agricultural Resources Act (CARA) 43 of 1983 which aims at providing for the conservation of the natural agricultural resources by maintaining

land's production potential, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invasive plant species. To an extent, the CA policy is not in alignment with the Illima/Letsema programme which was established to reduce poverty through intensified production initiatives, mechanization based ploughing and food 'massification'. Common ground is possible if more sustainable options for food production can be integrated in these programmes as they do seek to increase food production.

The CA policy is linked with Green Economy with regard to water Conservation and the potential of emission and pollution mitigation which is highlighted as limited in the framework. The Bio-economy address the investment in soil conservation and water resource management initiatives which is linked to the principles of CA. The adoption of the CA policy will ensure development of regulation to address Climate Smart Agriculture incorporated in the CARA (Act 43 of 1983) to strengthen compliance and sustainable use of limited agricultural resources.

The intent of a policy on Comprehensive Producer Development Support is to provide access to appropriate technologies, increase localised production, improve food and nutrition security and improve the livelihoods of rural households. The alignment of CA policy will address the issue of appropriate technologies and increase crop production due to implementation of three CA principles previously mentioned in policy document.

### **3.7 IMPLEMENTATION PLAN**

This document constitutes a policy implementation framework and the detailed implementation thereof should be detailed in a strategy and programme outline. However, a few general observations and recommendations are made:

#### **Formalisation of Conservation Agriculture institutional structures for implementation**

Successful implementation of the CA policy will depend on achieving collaboration between all stakeholders involved, through a conscious and deliberate effort. To implement the policy, its custodian, the DAFF will convene a relevant stakeholders' forum that includes key private and public sector partners. The forum will oversee the implementation of the policy as well as the monitoring and evaluation of the progress achieved over a given period of time. This forum should represent producers, their representative bodies, training and education institutions, research, relevant input suppliers, manufacturers, produce markets, consumer organizations and civil society. As CA is implemented by farmers, they are critical in uptake and should play a direct role in policy implementation. Proposed policy measures should put the farmer at the centre of implementation. To actualise this critical aspect of farmers lead modality the institutional structures will be devolved up to local level to cater for community based and led of LandCare principle.

Although DAFF is the policy custodian, other relevant public institutions should be co-opted to ensure that an enabling environment for CA adoption is created. Research organizations such as the ARC also have a vital role to play in effective implementation by conducting and facilitating relevant research, in collaboration with stakeholders, specifically farmers. This will ensure farmers lead demonstration, upscaling and revolution of farmer field school to facilitate smallholder development and agrarian reform.

#### **Capacity building and support services at all levels**

Training and education institutions are vital in capacitating farmers and other stakeholders in CA by integrating the concept in their curriculum. This will require a deliberate paradigm shift. Consumer organizations and civil society also have a role in shaping opinion and thus promoting CA policy implementation through demanding sustainably produced food. It is suggested that this forum determines the way in which the different policy options will be funded and implemented, as a coordinated effort. Careful documentation of resolutions taken should be part of a transparent record keeping process. Monitoring the activities and also establishing a high level monitoring and evaluation (M&E) plan should be a key responsibility of the secretariat of this forum – which should also be constituted with public and private sector membership. The systematic promotion and alignment of CA messages as pillar to build resilience against natural disaster and food insecurity should guide public interface. Engaging stakeholders in implementing the policy can be stimulated by documentation and publication of case studies, evidence based learning, promoting practical and effective local solutions and learning materials. These publications should be distributed widely, not only in creating awareness, but to further stimulate innovation in CA adoption. Various stakeholder platforms can be capacitated and utilised for this.

### **Funding and incentives**

Implementation of the CA policy will require substantial public and private sector investment. The public sector can focus on research; training; infrastructural development and relevant services, resources and incentive schemes (subsidised equipment, tax rebates, etc.). The private sector will also need to contribute in terms of investment in training, research and awareness, and in providing the pull factor for CA goods and services. Dedicated funding to subsidise implementation is envisaged for design, manufacturing and distribution of CA equipment and creating the necessary incentive schemes such as PES, training and education, awareness campaigns, research, etc. Apart from public or private sector funding, global donor funds such as the Green Fund and the Global Environmental Facility (GEF) can also be explored. The introduction of incentives for provision of no till planters to smallholders will propel a switch from conventional system to Conservation agriculture, while support on cover crops will ensure that all principles of CA are applied by farmers.

### **Development of CA information management and monitoring system**

The upscaling and proper incentive of CA in the country depends on the development of appropriate and integrated information and monitoring system. The system will guide appropriate interventions to different farming levels and monitor effectiveness of interventions in upscaling CA. The system is intended to cater for a farm level, geographical and national scale. Moreover a strategic tool for national and international indicators dealing with sector imperatives and international conventions.

## **3.8 COMMUNICATION PLAN**

Dissemination of the CA policy is the responsibility of all stakeholders, using all possible stakeholder platforms. The DAFF should be at the forefront of creating awareness and obtaining buy in, as the custodian of the policy, but the participation of all relevant stakeholders should be actively sought. As described in more detail under policy options, Government should invest in a multi-stakeholder national awareness and education campaign on the benefits of CA, built on CA's contribution to the green economy, food security and rural development - and effectively, national security. Producers and their organisations should be targeted, but since CA contributes to societal

wellbeing, it should also target consumers. Various means of communicating the policy can be used. These include various stakeholder and innovation platforms and the media (newspapers, radio, television, producer publications); civil society through consumer organisations, etc. As suggested earlier, the publication of relevant results and case studies, through various means, is suggested. Social media can also be utilised effectively as a wide reaching instrument to create awareness. Policy briefs highlighting CA's success stories and forums can also be used.

### **3.9 MONITORING AND EVALUATION**

Monitoring and evaluation of CA policy, as suggested under policy options, should be an integral part of policy implementation, guided by DAFF. As mentioned earlier, a multi-stakeholder panel or committee is suggested for the task of coordinating the implementation of a Participatory Monitoring and Evaluation (PM&E) framework on different levels.

The suggested monitoring and evaluation committee or panel should be appointed and facilitated by DAFF, and should be representative of all stakeholders mentioned. A PM&E framework should be developed and implemented on national, provincial/district, and farm level) measuring different criteria constituting social, natural, physical, human and financial capital. This framework should be a collaborative effort by the public and private sector. A committee consisting of respected public and private sector scientists, farmers and representatives from consumer and producer organisations should be constituted to guide the development and implementation of this framework, which would include the identification, measurement and evaluation of key indicators of CA use. Indicators should be agreed to and will assess the adoption of CA and the extent of its impact on sustainability and production. These indicators include area under CA, ideally specified per farmer category (scale of farmers). Other indicators suggested include GHG emissions, a carbon stock inventory, soil health indicators, input use, stocking rates; production figures, etc.

A PM&E framework as part of CA implementation will not only allow for evaluation and creating awareness, but it will be of great value in sharing understandings and findings; to increase engagement and uptake; to strengthen organizations and promote institutional learning; to encourage institutional reform towards more participatory structures; etc. In this context PM&E is less as an instrument of reporting and auditing, and more as a means of “enabling organizations and groups to track progress, build on successes, and enhance capacities for learning”. Furthermore, the PM&E is built on the basis of participatory processes, where beneficiaries are involved at all stages, and where participation and empowerment are considered as an end in themselves.

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### **3.11 POLICY OWNER /COORDINATOR**

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