



**MACS-G20**  
**Technical Workshop on Climate Change:**

**Lessons Learned on Climate Resilient Agriculture**

**Venue: IPB International Convention  
Center, Bogor, Indonesia**

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**Presentation : SOUTH AFRICA**

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# SOUTH AFRICA - Overview

- **Population:** The current population of South Africa is **60,8 million**
- South Africa has a **highly diversified agricultural sector** -
- Agric contributes approx. **5%** of Greenhouse gas (GHG) emissions
- South Africa First Nationally Determined Contribution (NDC) under the Paris Agreement (PA) - Updated September 2021
- **Agric included SA's NDC**



# SOUTH AFRICA CLIMATE CHANGE CHALLENGES

- The Agricultural sector is very fragile and vulnerable to climate variability and natural disasters of hydro-meteorological origin.
- Floods, heavy rains, hailstorms, droughts, cold spells and heat waves, pest and diseases are regular phenomenon affecting the agricultural sector in the country.
- Climate change effects are also being felt heavily through the frequency of the occurrence of disasters, and it is aggravated by population growth, urbanisation and environmental degradation.
- In agricultural sector, disasters disrupt livelihoods of the farming communities, endanger animals and crop and threatens food security.
- Damages resulting from disasters negatively impact on socio-economic growth and development of the country at large.
- It is, therefore, imperative that the climate smart agriculture (CSA) and

Disaster Risk Reduction (DRR) is mainstreamed into the departmental policies

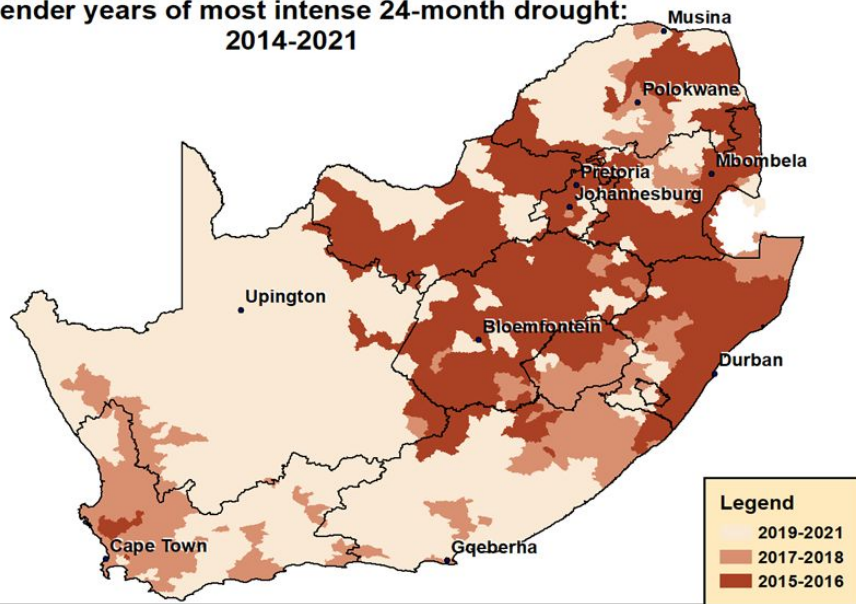
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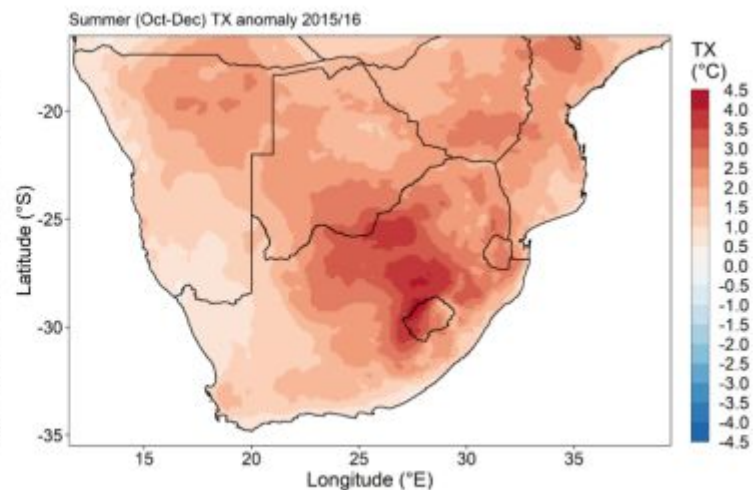
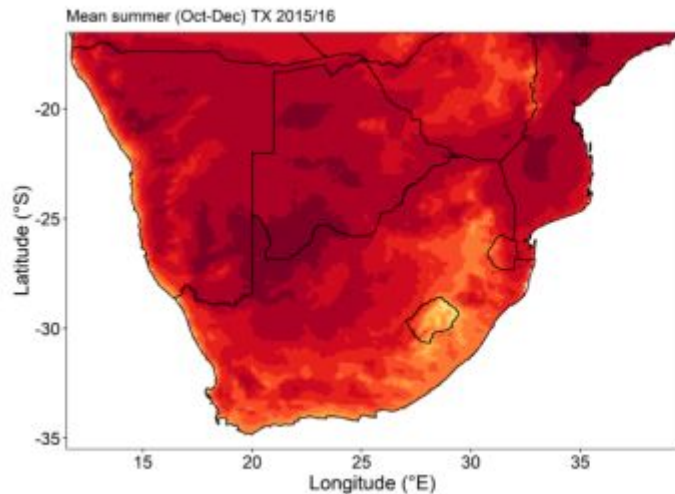
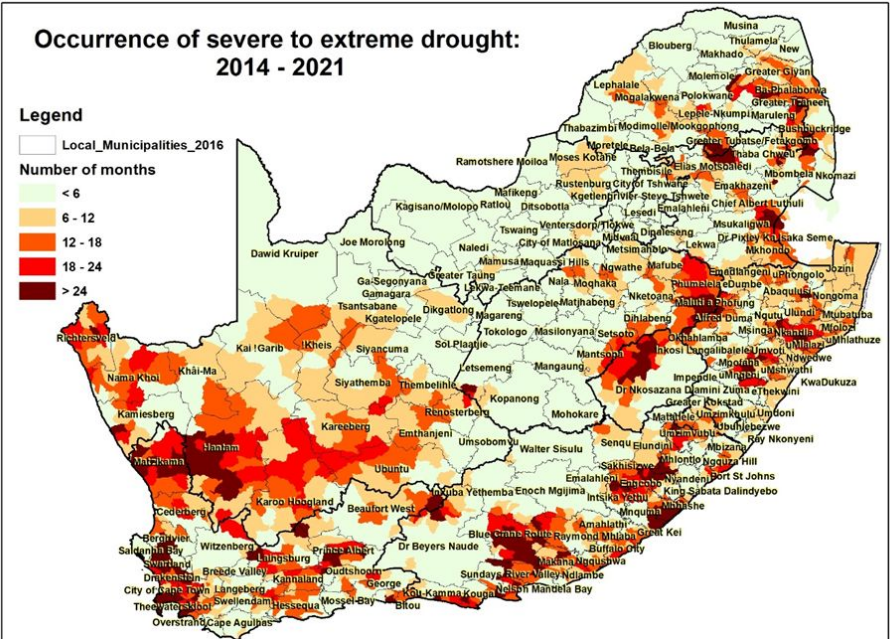


# Climate change and drought hotspots

Calendar years of most intense 24-month drought:  
2014-2021

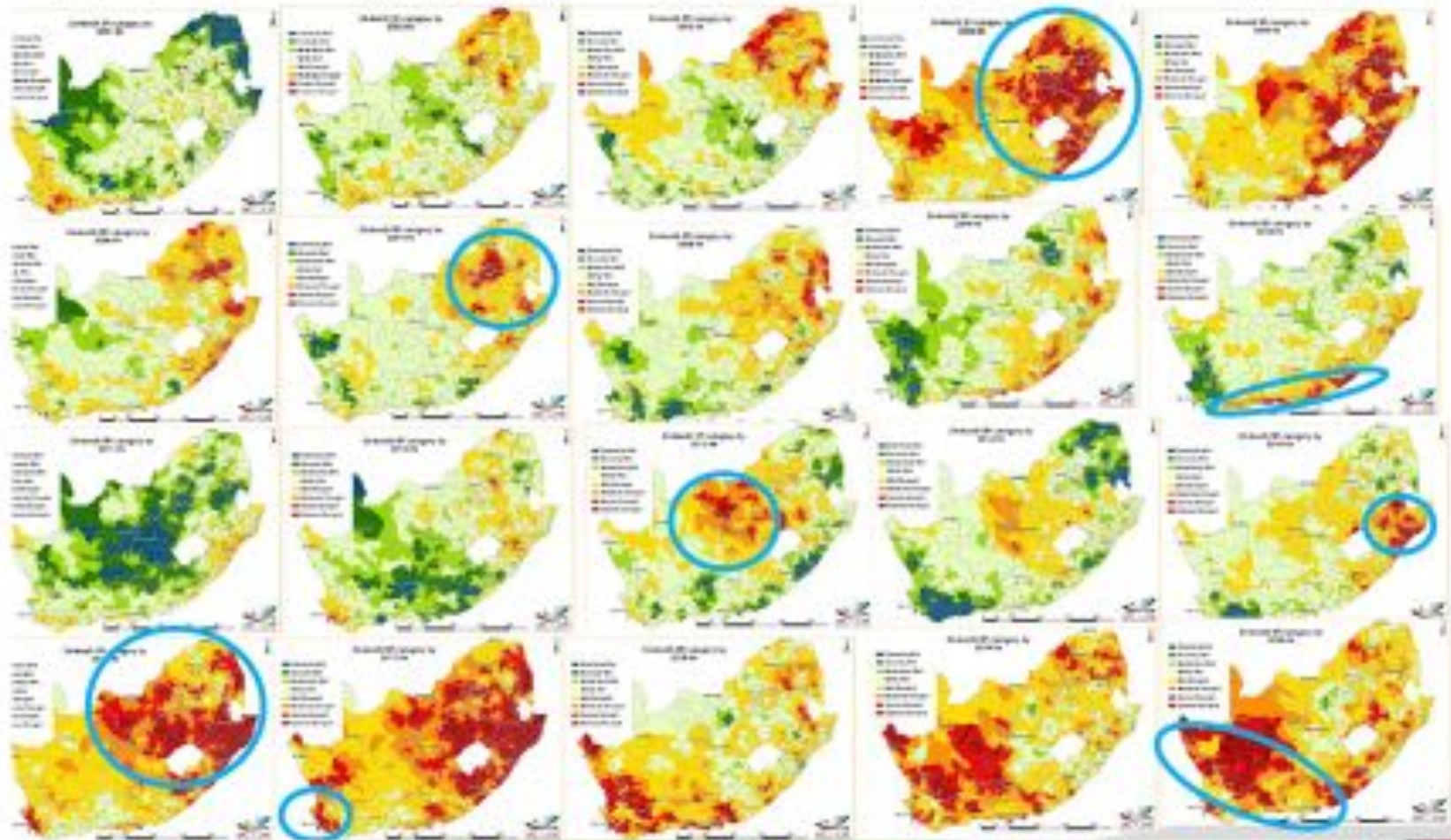


Occurrence of severe to extreme drought:  
2014 - 2021



# Drought Occurrences in SA over a 20 Year Period

June 24-month SPI: 2001 - 2020



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# Land degradation

## Land degradation in Limpopo Province

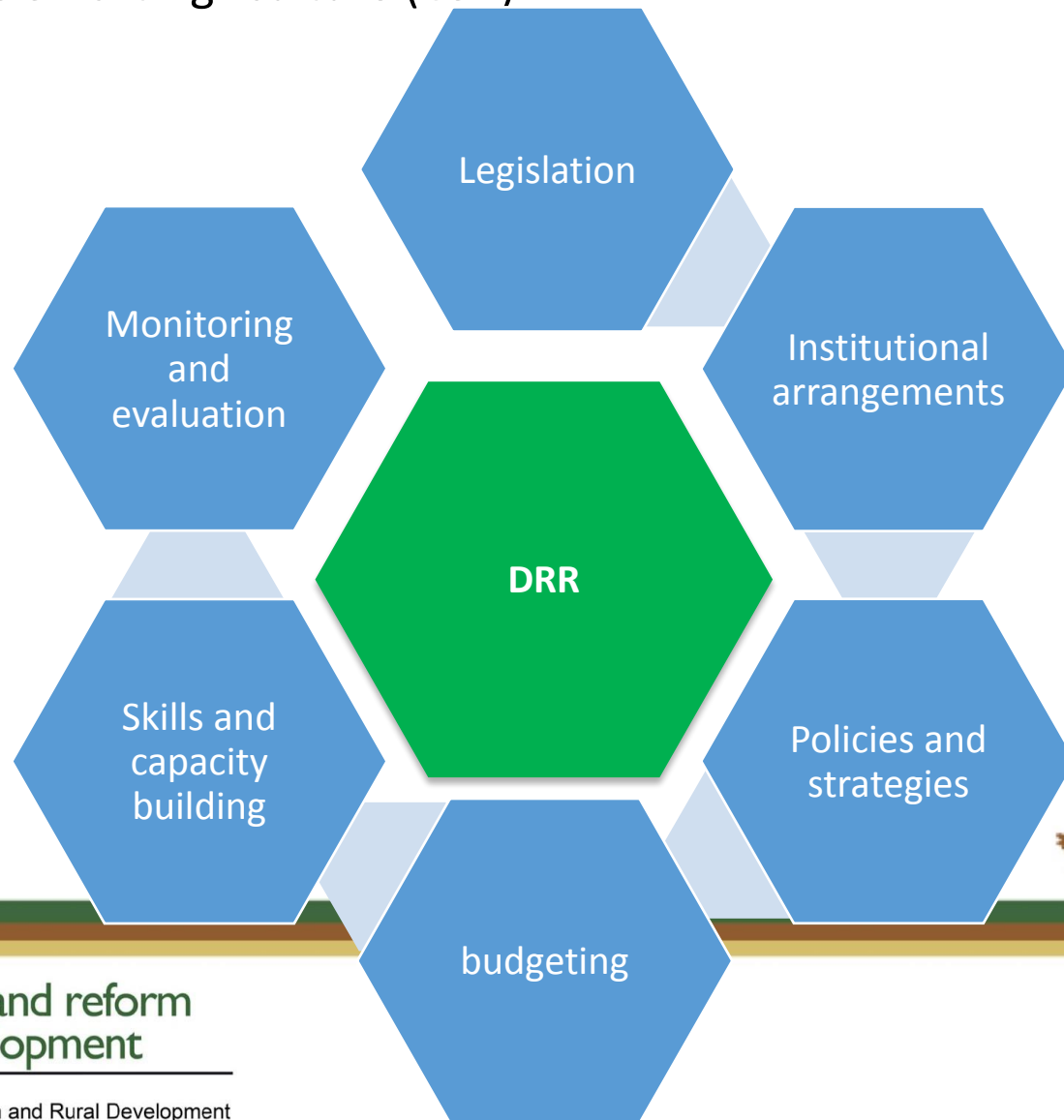


# METEOROLOGICAL HAZARDS AND DISASTERS THAT AFFECTED THE SECTOR

- **Drought:**  
2013/14 to 2019/20 and impact still being felt in some provinces—national state of disaster declared three times with national classifications in between.
- **Floods:**  
2020/21 and 2021/22- KwaZulu Natal, North West, Free State, Limpopo, Mpumalanga, Eastern Cape, Western Cape and Northern Cape affected and still dealing with the impacts—national state declared during both occurrences.
- **Veld (Wild) fires:** Western Cape (Knysna being the worst and declared provincial state of disaster), Northern Cape, North West, Mpumalanga.
- **Covid-19 pandemic:** Relief programmes were established to support the farming communities

# MAINSTREAMING OF DRR & CSA

Mainstreaming Climate Smart Agriculture and Disaster Risk Reduction (DRR) and Climate Smart Agriculture (CSA)



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# LEGISLATION

- The sector is mandated to implement DRR and climate change mitigation and adaptation through the following legislations among others:
- The sector facilitates the implementation of Disaster Risk Management in the sector through the **Disaster Management Act (Act No. 57 of 2002)** as amended,
- **Agricultural Pests Act (Act No. 36 Of 1983)**: To provide for measures by which agricultural pests may be prevented and combated, and for matters connected therewith
- **Conservation of Agricultural Resources Act (Act No. 43 of 1983)**: To provide for control over the utilization of the natural agricultural resources of the Republic to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.
- Legislations that deal with plants, animals and health issues.
- White Paper on Climate Change (2011), Climate Change Bill, National Climate Change Strategy (NAS)



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## LEGISLATION continues

The **Climate Change Bill**, considered by both houses of Parliament from 2018, is currently being finalised

In 2019, South Africa passed a **Carbon Tax Act**, and started pricing GHG emissions in all sectors other than waste and Agriculture, Forestry and Other Land Use (AFOLU)

**CARBON TAX** – Agriculture exempted from the first phase.

The **objectives of the Carbon Tax Policy**:-

- *The primary objective of implementing carbon taxes is to change future behaviour, rather than to raise revenue*



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# LEGISLATION

## Climate Smart Agriculture Strategic (CSA) Framework:

The vision is for a socially inclusive, climate resilient and sustainable Agriculture sector attaining high productivity for national food and nutrition security through climate-smart agricultural practices.

## Outputs of the Framework:

- 1) **An enabling and coordinated Policy Environment.**
- 2) **Strong Climate Smart Agriculture sector anchored by coordinated, capacitates institutions and partnerships.**
- 3) **Increased investment in research and expanded CSA knowledge.**
- 4) **Resource efficient and efficient resilient value – chain based on technology innovation.**



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# LEGISLATION continues..

## Climate Smart Agriculture Strategic (CSA) Framework:

The vision is for a socially inclusive, climate resilient and sustainable Agriculture sector attaining high productivity for national food and nutrition security through climate-smart agricultural practices.

## Outputs of the Framework:

- 5) **A CSA Advocacy and Communication strategy that enhances the understanding of CSA, builds consensus on issues and stimulates stakeholders action.**
- 6) **A diverse funding base to build a climate resilient investment programme.**
- 7) **An incentivized and driven CSA systems characterized by strong stakeholder commitment.**



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# Adaptation: Crop Suitability to climate change: Sorghum

## Rationale and objectives

- Overcoming the palpable threat of climate change to sustainable agriculture in South Africa calls for the adoption of resilient methods of food production like conservation agriculture.
- The long-term objective of this study is to assess the potential impact of climate change variables (rainfall, temperature,) on the productivity of sorghum and to recommend appropriate crop management strategies to adapt to and mitigate climate variability.
- The proposed research has two priority sectors namely;
  - (i) Ecological intensification approaches such as conservation agriculture, which optimize the use of ecosystem services to produce food at lowest costs and environmental impact and,
  - (ii) Appropriate use of soil, water, land and other inputs management practices, including improved mechanization, integrated pest management through crop rotation, with the aim of delivering greatest benefits at lower costs and environmental impact.

## Study areas

- KwaZulu Natal, Limpopo, Free State and Mpumalanga Provinces



## Impact

- Rural agrarian transformation through increased food security, job creation, promotion of smallholder and resource poor farmers' entry into the bio/green economy through increased sorghum production for food and industrial purposes.
- Strengthening the linkage between food production and environmental sustainability.

## Lessons Learnt

- There is significant potential for sorghum production at each of the four sites.
- Farmers are willing to take up sorghum production provided that there are suitable market opportunities.
- With adequate training, most smallholder farmers are willing to take up climate smart agriculture.



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# Mitigation: Upscaling biogas production using crop and animal wastes

## Rationale and objectives

- Implementing Renewable Energy programme: Smallholder/subsistence producers/farmers supported with integrated bioenergy(biogas) technology .
- The overall AIM and objectives:** The project seeks to build climate change resilience of the smallholder farmers through enhancement of the integrated bioenergy-crop-livestock system
  - Implementation of Integrated bio-energy-crop-livestock system aimed at optimising resource utilisation, improving food and nutritional security ;
  - To install biogas digester technology in rural area to improve energy security among rural dwellers
  - To utilise biogas slurry to improve backyard gardening
  - To install rainwater harvesting equipment to assist in increasing water available for agricultural production

The biogas can be used as a fuel source to generate electricity for on-farm use or for sale to the electrical grid, or for heating or cooling needs (EPA, 2012)

## Study areas

- KwaZulu Natal, Limpopo, Eastern Cape and Mpumalanga Provinces



## Impact

- Improved rural livelihoods – improved household health
- Sustainability – introduce farming practices that reduce GHG emissions, reduce waste and encourage bi-product re-use as well as deforestation.
- Investment – investment in technology such as biogas digesters, rain gauges and rainwater harvesting. As well as capacity building through workshops and introduction of new technologies.

## Lessons Learnt

- Need for upscaling of these projects as there are positive spin-off/ opportunities.
- If up-scaled, this technology helps to reduce greenhouse gas (GHG) emissions from methane.



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# INSTITUTIONAL STRUCTURES

- A unit established - deals with disaster risk reduction and climate change which is also a nodal point to National Disaster Management Centre (NDMC)
- Developed sectoral disaster management plan with hazard-specific plans annexed
- DRR units established at provincial level although some provinces are still having capacity challenges
- Collaboration with other sectors, private sector, research and academic institutions through the NDMC
- Established sectoral structures such as National Agrometeorological Committee (NAC) - coordinates early warning system and provides advisory service to the sector
- Joint Operation Committee (JOC) - coordinates disaster response and recovery (*ad hoc*)
- Placement of DRR within the structure of the department is very important to enable the unit to carry out its mandate of coordination.



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# SECTOR STRATEGIES AND POLICIES FOR DRR

- The department prepared the Sectoral Disaster Risk Management Plan (SDRMP) in line with the disaster management legislation, in which the disaster risk reduction principles are clearly outlined.
- The SDRMP outlines pre- and post-disaster management measures with emphasis on risk reduction.
- Hazard-specific plans for drought, flood, veld fires, heat and cold spells developed
- National and Departmental Climate Change Policies, Strategies including Frameworks and Sector Response Plans developed.
- Disaster relief framework developed
- Landcare and farm management plans
- Land Use Management policies



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# LOCUST CONTROL

- Department controls locust outbreaks in terms of the Agricultural Pest Act, 1983 (Act 36 of 1983).
- There are four declared locust species in South Africa; namely, African Migratory Locust, Brown Locust, Red Locust and Southern African Desert Locust.
- The endemic outbreak area of the brown locust is the Karoo which covers mostly the Northern Cape and parts of Eastern Cape and Western Cape Provinces.
- The department procures insecticides, protective clothing and spray pumps in stores in both De Aar and Upington Depot as a contingency measure to deal with the outbreak of locust when it occurs.
- The department appoints locust control contractors in the endemic areas who are activated to control the outbreak when it occurs.
- Aerial spraying is used to assist ground control.



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# SKILLS AND CAPACITY BUILDING

- The department has various programs that focus on training of farmers and building capacity through research and public awareness.
- Furthermore, the department offer bursaries to employees to improve their qualifications, and this includes disaster management qualifications with various institutions.
- Efforts are being made to build capacity and focus on skill development for extension practitioners and farmers particularly rural and poor resourced small-scale and smallholder producers and women farmers who are the most vulnerable and have little or no means to cope with the adverse effects of climate change.



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# MONITORING AND EVALUATION

- The Department/Sector provides oversight and monitoring over implementation of DRR and Climate Change programmes including Climate Smart Agriculture programmes and projects within the sector.
- Monitoring and Evaluation (M&E System) – assist in tracking the sector adaptation and mitigation responses;



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# PROGRAMMES AND PROJECTS

- **Early Warning System (EWS):** People-centred system through which early warning information is issued in the form of advisories and daily extreme weather warnings for prevention and mitigation of disaster risks
- Prevention and mitigation of disaster risks: drilling of boreholes and construction of fire belts are examples of measures undertaken

## Capacity building and awareness

- **Crop suitability to climate change Programme:** adaptation programme focusing on four provinces (**MP, KZN, LP and FS**)
- **Renewable Energy Programme:** biogas production using crop & animal wastes—implementation in five provinces (**KZN, MP, EC, LP & NW**)
- Implementation of disaster relief schemes in the affected provinces
- Migratory pest control (Locust, black fly and quelea birds)



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## CONCLUSION & WAY FORWARD continues..

- **Agriculture** – included in South Africa(SA)'s updated NDC to UNFCCC;  
Focus on domestic actions to implement the NDC;
- GHG emission Reduction Plan - 2023
- **Presidential Climate Commission Report: A Framework for a Just Transition in South Africa**
  - Farmers to invest in more resilient infrastructure and crops, such as shade for orchards, drip irrigation and heat-resistant varieties (Chisoro-Dube and Roberts 2021)
  - Prioritise understanding of impacts, risk and vulnerability for the key sectors, and the development of climate response plans.
  - The specific sectors recommended for prioritisation are health, water, biodiversity, **agriculture** and human settlements.
  - Update the country's Long-Term Adaptation Scenarios (LTAS)



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# CONCLUSION & WAY FORWARD

- **Agriculture:**
- Development of early warning systems for small scale farmers; and supporting climate-smart agriculture.
- The development of a multi-hazard early warning system;
- Capacity building for the farming sector on climate change; and
- Full implementation of a Climate Smart Agriculture Framework should be prioritised.



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# THANK YOU



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