

Printer 120606

NATIONAL CLIMATE CHANGE RESPONSE WHITE PAPER PUBLIC HEARINGS

5-8 JUNE 2012

VENUE: PARLIAMENT, CAPE TOWN



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Outline

1. BACKGROUND
 - 1.1 Agriculture
 - 1.2 Forestry
 - 1.3 Fisheries
2. ANTICIPATED IMPACTS AND VULNERABILITY
3. PRIORITIES AND POLICY DIRECTIVES FOR PLANNING ADAPTATION RESPONSE
4. ADAPTATION PROGRAMMES THAT ARE UNDERWAY.
5. CONCLUSION



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Background i/iii

- Scientific observations indicate that the sector in particular the South African agricultural landscapes are facing considerable impacts from climate change; this situation has far reaching implications on livelihoods, trade, job creation and food security.
- This situation is further compounded by the fact that at household level South Africa remains highly vulnerable to food security
- Agriculture is one of the more sensitive sectors of the South African economy likely to feel any impacts of climate change – both positive and negative - from both food security and livelihoods perspectives.
- Agriculture contributes less than 5% to GDP and approx 13% to national employment (direct contributions). Its full contribution, with multipliers, is approx 12% to GDP and 30% to national employment
- Agriculture – source of GHG emissions: 4.6% of total net emissions (GHG inventory 2000) mainly from enteric fermentation and manure management; cropland accounting: 3.7% of total net emissions



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Background ii/iii

- South Africa – regarded as a low-forest cover country, at least one third of the land area is characterised by some form of forest cover, consisting of natural forests, plantations, and mostly indigenous woodland (savannah) and thicket. Plantation forestry occupies about 1% of the land area and contributes roughly 1.2% of GDP.
- Much of the natural forests and woodlands have been degraded and transformed over past decades, although the exact extent and nature of this loss and degradation is poorly quantified.
- Natural forest and woodland ecosystems provide vital ecosystem services and forest goods for the benefit of society as a whole and in particular to neighbouring communities. In the 2000 GHG Inventory forest lands removed about 13 Million tonnes of CO₂, which makes it the single largest sink of greenhouse gasses in the country.
- Forests - play a pivotal role in livelihoods of the rural poor, and are a vital component of climate change adaptation at household level.



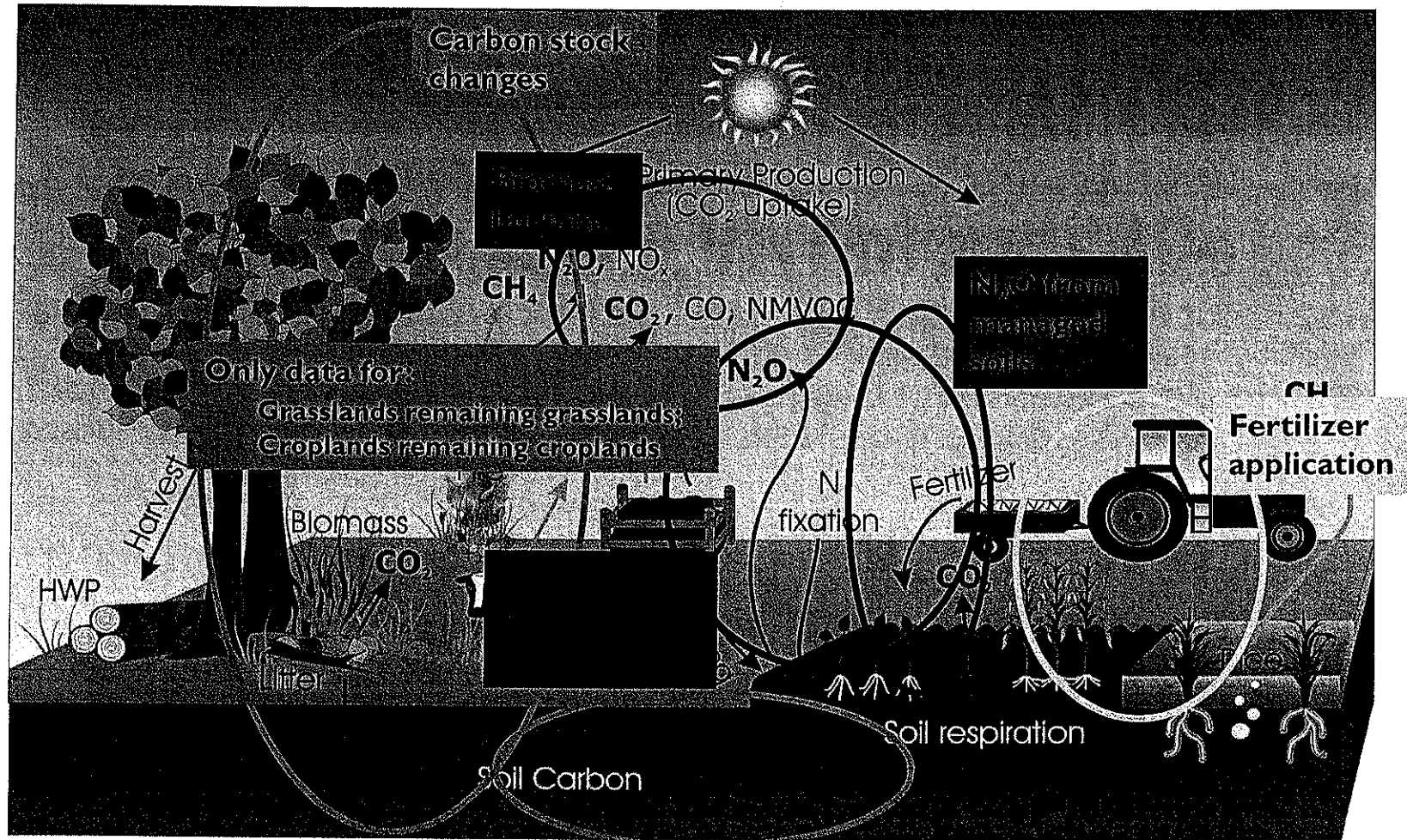
agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

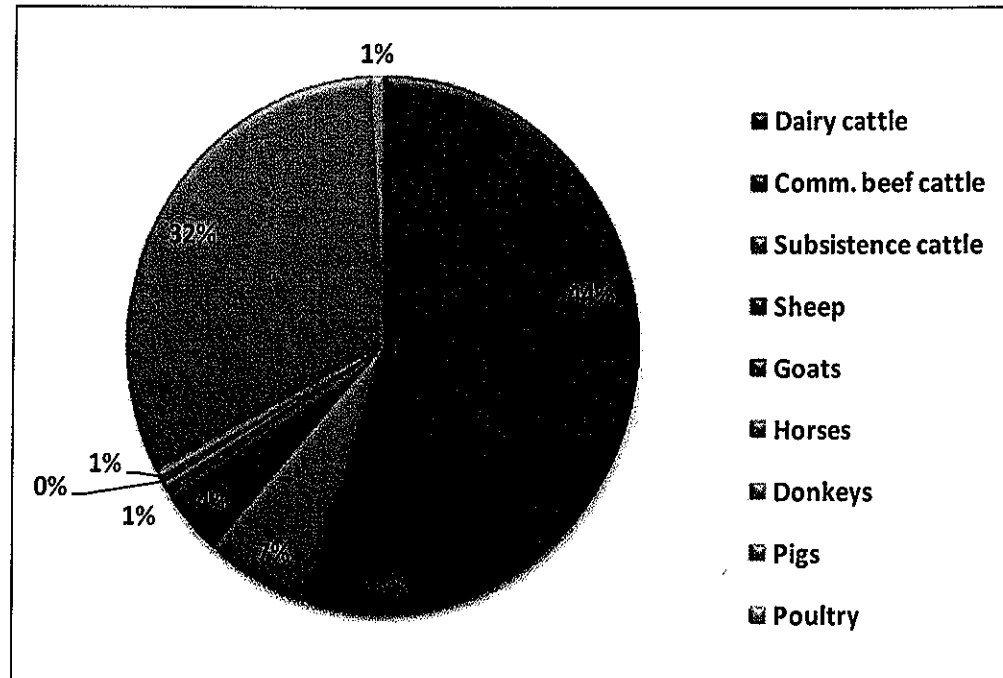
Background iii/iii

- South Africa's fish industry is estimated to have an annual value of ~R80bn and employs over 20 000 directly, and many more indirectly.
- Both commercial and small-scale recreational fisheries contribute minimally to the South Africa's GDP (1.8%), however, aquatic living resources have high nutritional value and harvesting thereof contributes to the livelihood of coastal communities.
- Demersal catch contributes to 44% of annual value. By 1990, catches had dropped to 60% and have been falling ever since.
- Linefish contributes to 10% of total annual value, however 18 out of 27 species have collapsed.
- Rock Lobster stocks are estimated to be at 5% of original biomass and Abalone is no better.
- Pelagic catches make up more than half of the total fish catches but this is also declining and is used for animal feed.
- Mariculture (the way forward) is very small. Though it generates 2bn, it makes up only 2% of the total fish catches.
- The main challenge to the Fish industry in general is overall decline in catches. The question is this decline due to overfishing or does climate change play a role?

SA Agric GHG inventory:2004



SA agric GHG emissions



SA Agric Inventory 2004: Total CH₄ emissions from enteric fermentation

COMPARISON OF GHG EMISSIONS (IN GG) PER CATEGORY IN THE INVENTORY YEARS 1990, 2000 AND 2004.

SOURCE: THE SOUTH AFRICAN AGRICULTURAL GREENHOUSE GASES INVENTORY FOR 2004

	1990	2000	2004
Enteric fermentation	916.55	903.29	1224.98
CH ₄ from manure management	83.41	90.65	158.06
Direct N ₂ O from manure management	1.34		11.76
Indirect N ₂ O from manure management			2.53
Direct N ₂ O from managed soils	52.22		51.19
Indirect N ₂ O from managed soils	16.85		15.58
CO ₂ from urea application			435.90
CO ₂ from liming	459.83		585.60
CH ₄ from biomass burning	63.90	41.30	23.00
N ₂ O from biomass burning	2.2	2.52	1.70

¹ There are several blank spaces in this column as only the enteric fermentation component (and biomass burning) was updated in the 2000 inventory, therefore values for the other sub-sections were not reported.

Anticipated impacts and vulnerability (Agric)

- **Climate change will have a variety of impacts:** It is likely to lead to a rise in sea level, more droughts, floods, heat waves, water shortages, and increased threats to human health.
- Agriculture = largest consumer of water – vulnerable to changes in water availability, increased water pollution, etc

Evidence suggest that:-

- Whilst the main crop growing areas are likely to remain the same, there are likely to be changes in crops and cultivars,
- Yields from certain crops will increase in some areas decrease in others
- Certain previously unsuitable areas for specific crops will become suitable and vice-versa
- Marginal land will become prone to reduced yields and crop failure due to diminished soil productivity and land degradation
- Diseases and insect distribution will alter, affecting both plants and animals.
- Evaporation from dams and soil will increase
- Maize: Optimum Planting dates are projected to change
- Projected decreases in Cold Spells and Severe Cold Spells p.a. by 2050s
- Projected increases in Heat Waves & Extreme Heat Waves p.a. by 2050s

Anticipated impacts and vulnerability (Forestry)

- Climate change can significantly affect forests through changing their health, physiology, structure, distribution and species composition
- Plantation forestry is a long term economic investment that is particularly vulnerable to risks associated with droughts, fires and disease.
- There is a significant risk that the adaptive capacity of forest ecosystems will be exceeded, compromising their ability to provide vital goods and services and their responsive resilience
- Escalation in the number of non-native pests and diseases as well as outbreaks arising from host shifts; and pathogens will spread much faster with increased intensity

Anticipated impacts and vulnerability (Fisheries)

- In South Africa, it has already been observed that there have been changes to the characteristics of water bodies, resulting in decreased availability of resources to the fishing community.
- The pressures of having to exert more effort to catch greater numbers of scarce resources and travelling farther distances to fish, results in increased fuel usage and emissions from large-scale industrial fisheries and will in turn contribute to GHG emissions.
- Implications for the inland and freshwater fisheries are similar to that posed to marine fisheries. Literature shows that climate change impacts on inland ecosystems are associated mainly with water quantity and quality.
- Temperature changes are likely to affect fish species and result in changes in their natural distribution patterns. Variations in the timing of flooding events may affect fish migration and spawning patterns.

Priorities and policy directives for planning adaptation response

Adaptation:

- **Adaptation is essential:** we cannot prevent climate change altogether so we must adapt. That means integrating risk reduction strategies into humanitarian and development strategies.
- Develop a CC adaptation strategy for the sector, and become practical in enhancing adaptive capacity to climate change
 - Access to means of implementation [finance, technology]
 - Work Programme to deal with ecosystems, sustainable agriculture and livelihoods
 - Adaptive research, adaptation programmes, early warning systems and infrastructure,
 - Enhanced risk management



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Priorities and policy directives for planning adaptation response

Mitigation:

Agriculture a contributor of greenhouse gas emissions:

- Require support to reduce emissions associated with new or continued development.
 - As climate change increases weather and climate related natural hazards, conventional disaster management and risk reduction strategies need to implement climate change adaptation and mitigation measures and vice versa in order to approach truly integrative disaster risk reduction.
- Balance between Adaptation & Mitigation



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Priorities and policy directives for planning adaptation response

Diversifying:

- Drought resistant crops & flood management strategies,
- Crops with shorter germination period and shorter growing season.
- Selection of varieties that are naturally resistant to specific disease causing organisms.

Farmer benefits

- Improved water management in agriculture, reduced energy consumption for irrigation.
- Reduced CO2 emissions, increased yield and biomass production.



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Priorities and policy directives for planning adaptation response

Zero tillage farming

If tillage is necessary, avoid autumn tillage and wait for spring (CA).

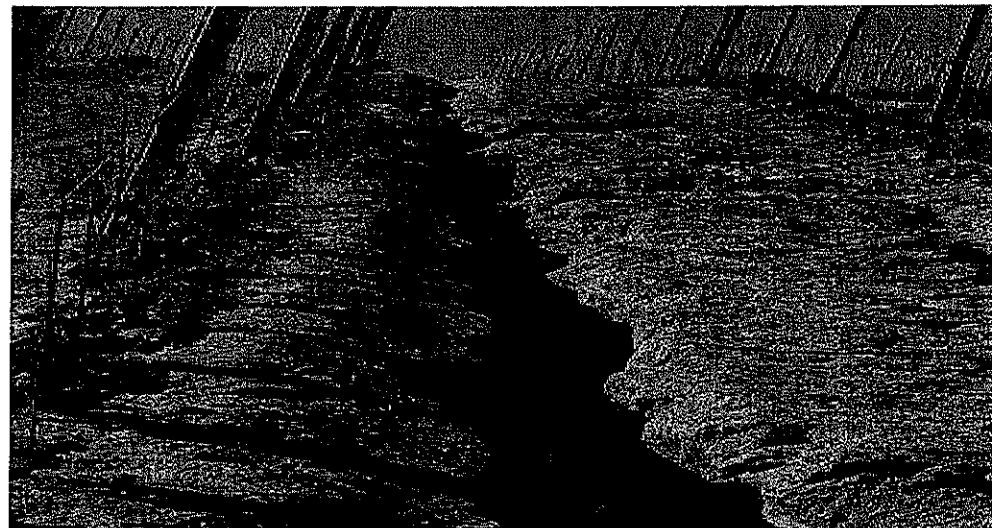
Farmers benefits

- Increases growth & dev of soil micro organism
- Better protection of land against erosion, degradation; reduced amount of tractor power, fuel, etc.



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA



Priorities and policy directives for planning adaptation response

Livestock management

- Formulation of diet
- New breed

Farmer benefits

- Better animal performance
- Reduced animal health problems



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Adaptation programmes that are underway

- Awareness programme: on-going activity, raise awareness through DAFF structures such as National Agro-meteorological Committee (NAC), Mentorship Action Programmes (MAP), Farmer Days, etc
- Land Care programmes – CA (wetland, soil- rehabilitation, etc),
- DAFF – already developed Climate Change Sector Plan (CCSP) for Agriculture (Baseline)
- DAFF currently developing the sector Mitigation and Adaptation Plan (Strategic deliverable 2012/13)
- DAFF conducted a preliminary investigation on Vulnerability Assessment to CC in the South Western parts of Free State Province



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Adaptation programmes that are underway

- Atlas of Climate Change (published) – assist DAFF i.t.o vulnerability assessments, inform policy development, adaptation & mitigation measures/strategies – make available to producers.
- More Research – pinpoint main drivers of Climate Change e.g. research on crop suitability, etc
- Flagship projects: Biomass and bio-digester projects – build bio-digester for generation of biogas for cooking and lighting from livestock manure, etc



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Conclusion

- South Africa has insufficient capacity to translate information into knowledge, for farmers to respond to climate change challenges and at local government level.
- Uncertainties about the extent of climate change impacts make it even more difficult to quantify the levels of vulnerability of different communities.
- Broadened Knowledge Systems need to be integrated with other sciences to maximize benefits from both systems.



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Conclusion continues..

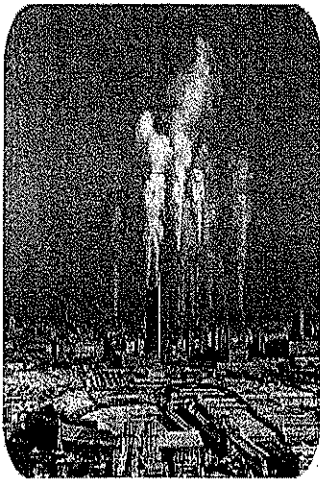
- There is a need to translate what is already known regarding climate change (impacts, vulnerabilities, etc) into knowledge that informs policy making
- Awareness of climate change issues by ordinary people could be improved – extension services
- Climate Change and Disaster Risk Management - Climate change mitigation and adaptation have to be harmonized with integrative disaster risk reduction.



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

thank you,



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA