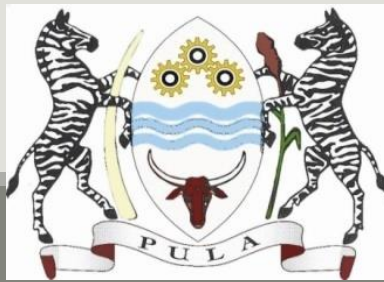


Sustainable Development in Agricultural Production within the context of Climate Change: experiences from ongoing UNDP/GEF-funded projects in Botswana

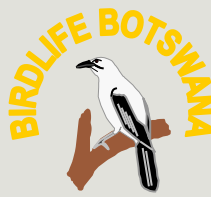
DR KABELO SENYATSO

DIRECTOR, BIRDLIFE BOTSWANA

ON BEHALF OF UNDP & THE THREE MANAGERS OF ON-GOING UNDP/GEF-FUNDED PROJECTS

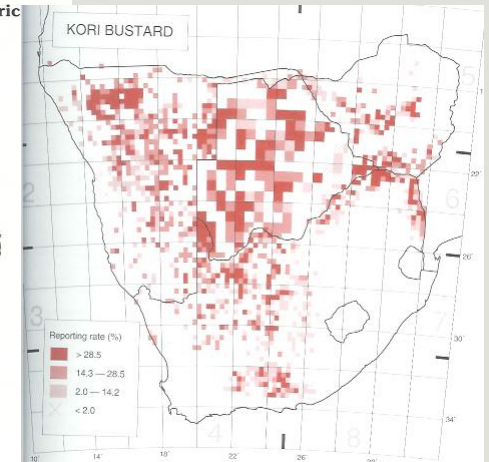
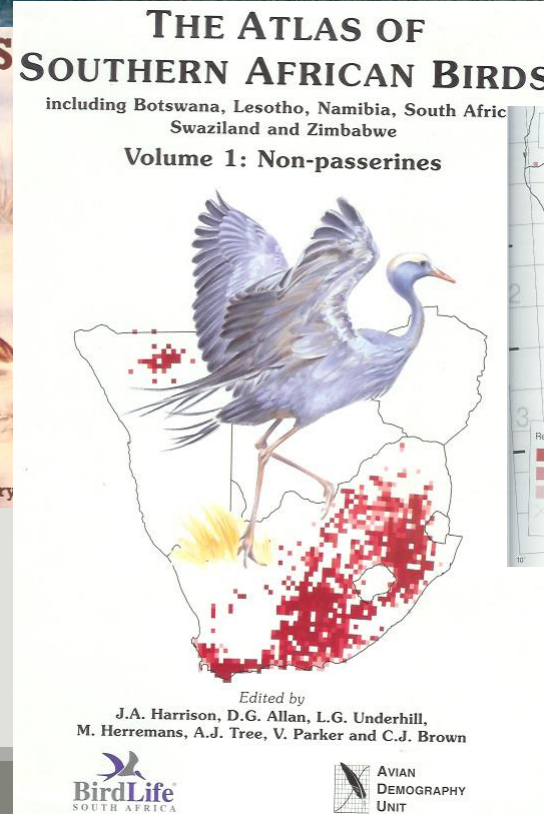
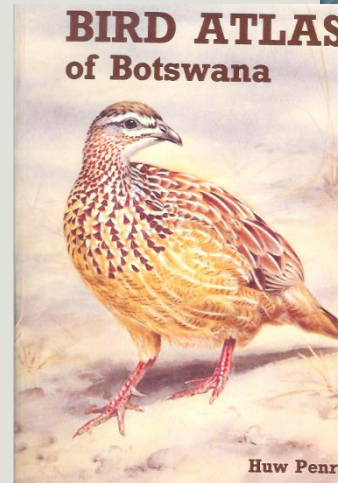


Who is BirdLife & why am I speaking to farmers on behalf of UNDP?



BirdLife has 4 programmes that address key areas

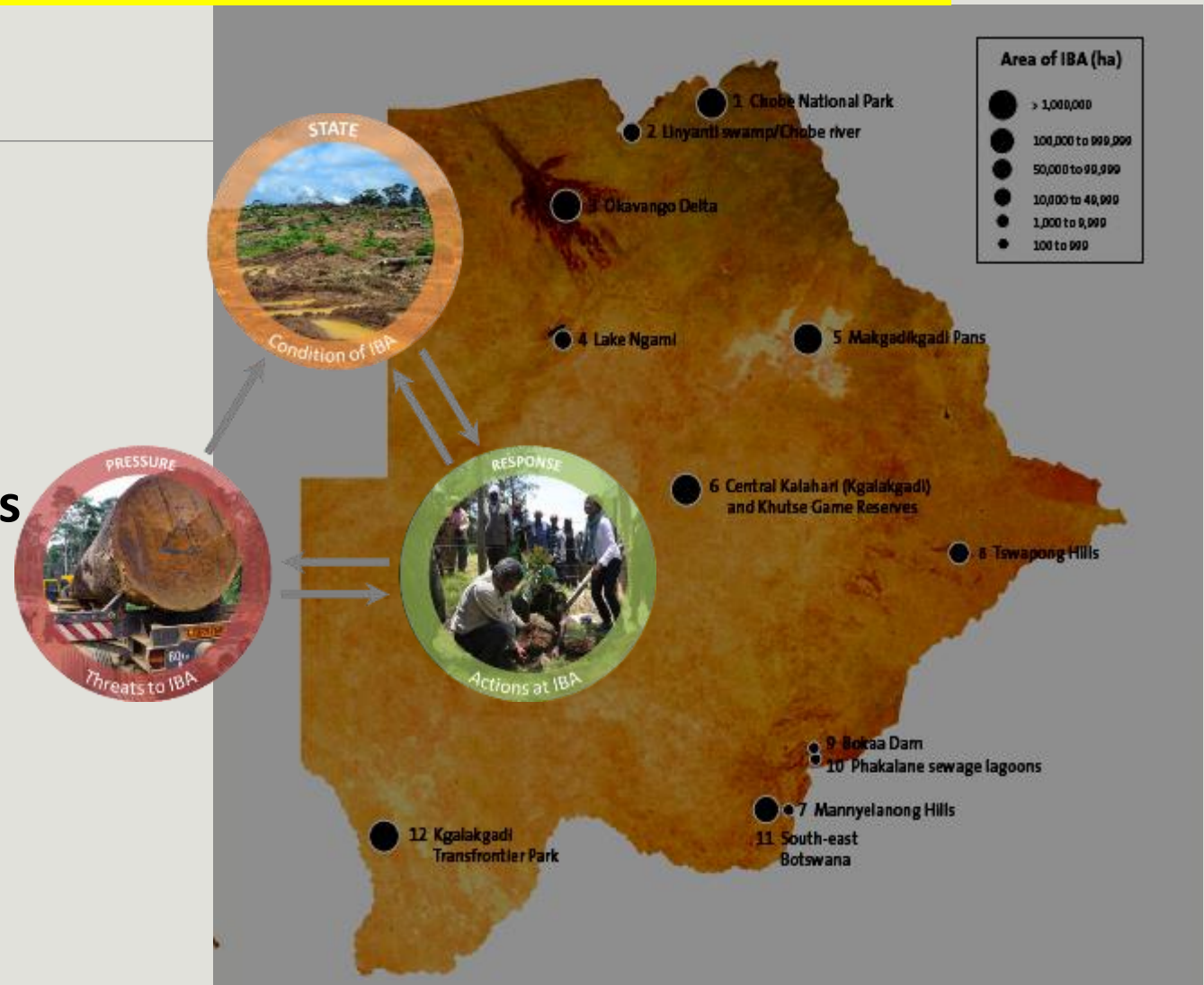
1. Species
2. Sites/Important Bird Areas
3. Ecological sustainability
4. People



Why is BirdLife speaking on behalf of UNDP?

BirdLife has 4 programmes that address key areas

1. Species
2. Sites/Important Bird & Biodiversity Areas
3. Ecological sustainability
4. People



Why is BirdLife speaking on behalf of UNDP?

Wildlife poisoning...
Some deliberate, some unintentional

BirdLife has 4 programmes that address key areas

1. Species
2. Sites/Important Bird & Biodiversity Areas
3. **Ecological sustainability**
4. People



(part of mixed flock killed in 1 event)
>200 in Kwando concession (May 2012)
>100 Lesoma (2011)

Why is BirdLife speaking on behalf of UNDP?

1. Species
2. Sites/Important Bird & Biodiversity Areas
3. Ecological sustainability
4. People



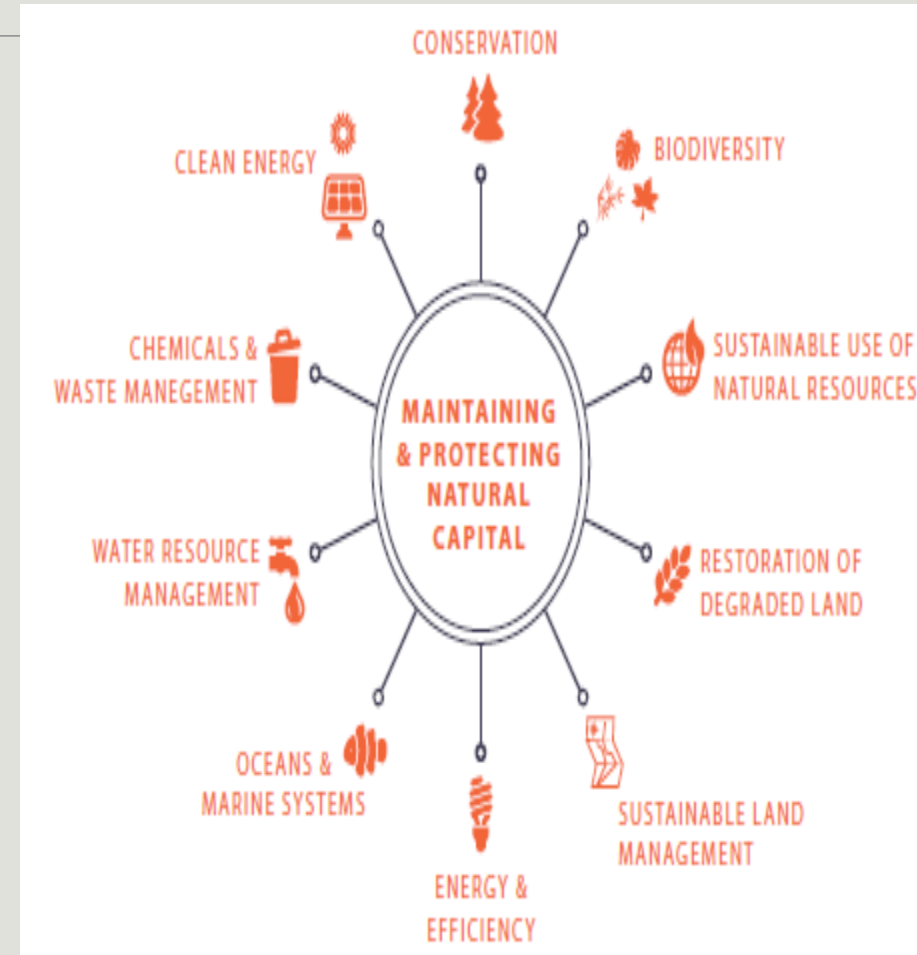


Climate change within the context of sustainable development...



- Sustainable Development Goals (SDGs) as blue-print for development planning from now until 2030
- Change change as an SDG by itself (SDG No. 13)
- ‘Change change’ SDG also critical if other SDGs are to be achieved e.g. SDG No 1 (No poverty); SDG No. 2 (No hunger), No. 14 (Life below water) and No 15 (Life on land) etc.

UNDP approach



Climate change and its impact on agriculture....



Crop Damage



Persistent droughts, unreliable rainfall patterns and floods cause production variability, leaving many people unable to produce and even purchase their own food.

- Heat stress reduces yields

Household, and ultimately national, food security is threatened by extreme weather. According to the IPCC, individual farmers are usually hardest hit by the effects of climate change because they lack spatial diversity and financial resources to enhance their production capabilities in one or more areas.



Livestock



The impact of climate change on livestock systems and the resource-poor people who depend on them for their livelihoods is considerable.

Increasing climate variability negatively affects livestock feeds and freshwater supply; and contributes to the prevalence of livestock diseases and heat stress, among others



UNDP support to climate change responses in Botswana

- Development of Climate Change Response Policy
- Development of Integrated Water Management Strategy
- Support to Disaster Risk Management
- Development of Nationally Appropriate Mitigation Actions
- Building resilience of local communities through GEF projects



UNDP support to climate change responses in Botswana, with specific reference to agriculture

- Technical and financial assistance e.g. the development of the national climate change strategy and action plan, which emphasises options for enhancing agricultural productivity
- For this talk will highlight some of the financial opportunities, followed by an overview of three technical projects where UNDP is providing direct support to mitigate the impacts of climate change with key geographic zones of the country

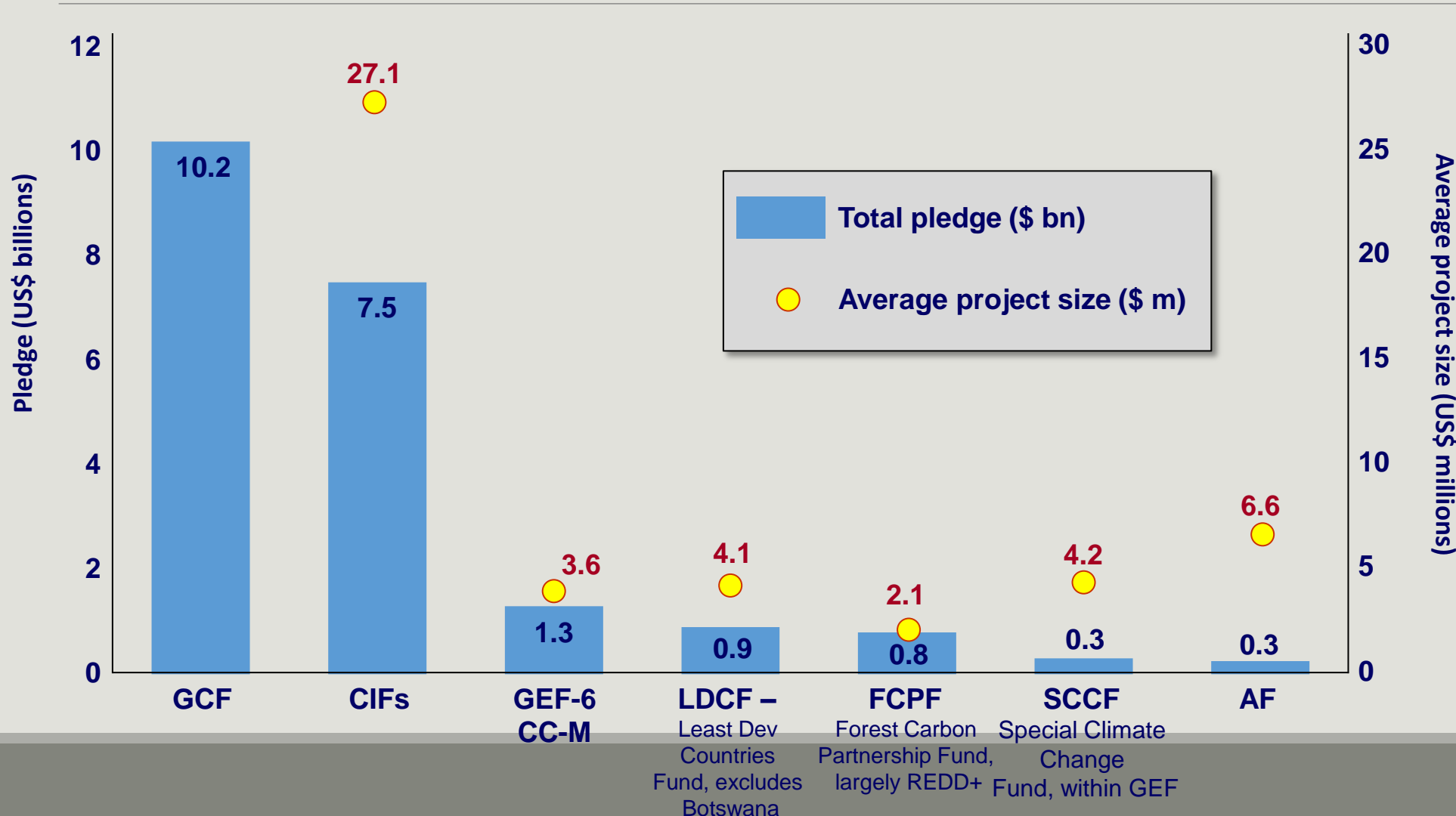


UN-managed and/or related climate change funding mechanisms ...recalling \$\$ commitments, e.g. at Paris Climate Change mtg, 2015

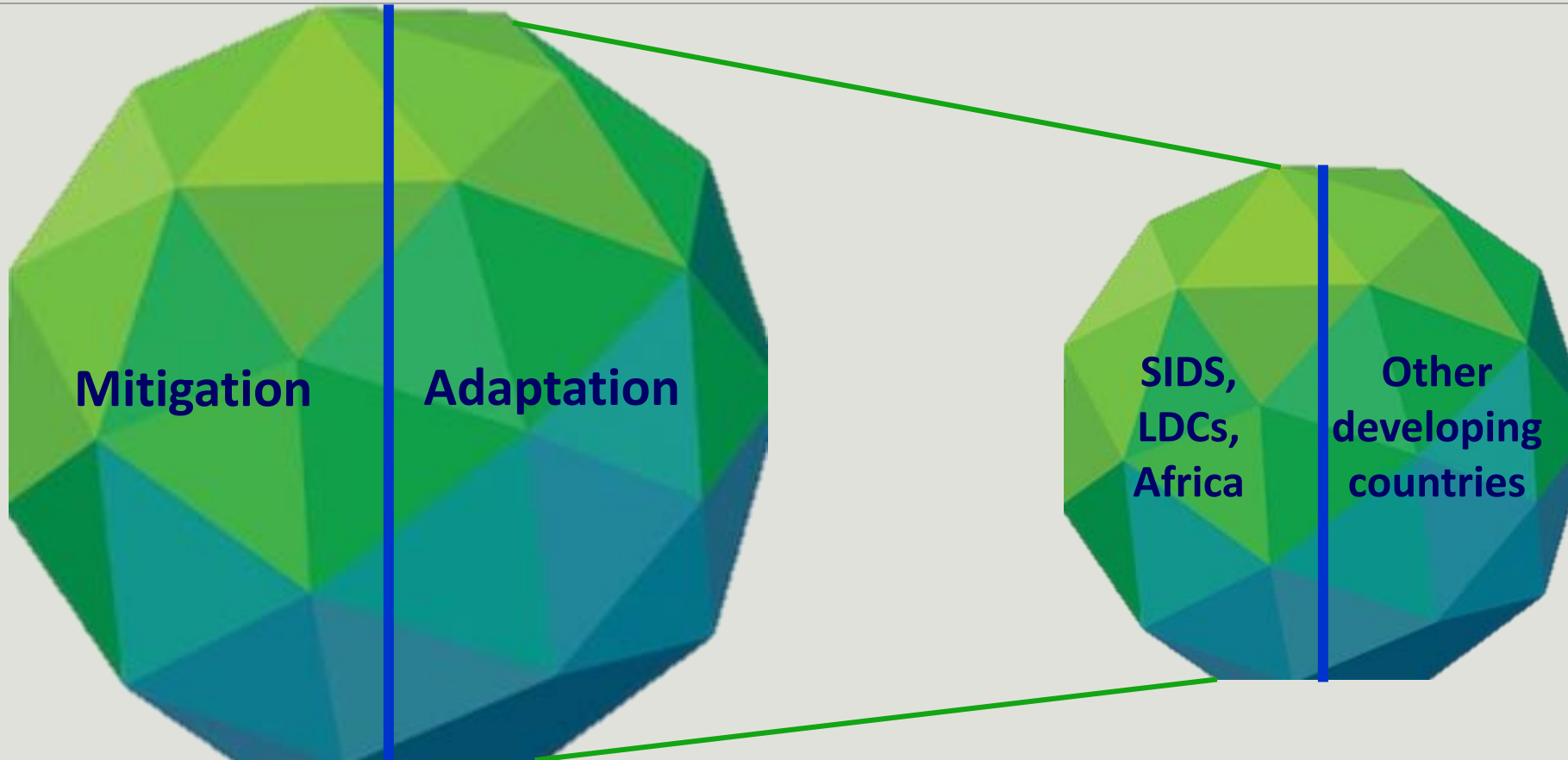
- Green Climate Fund (<http://www.greenclimate.fund/home>)
- Climate Investment Funds (CIFs, <http://www.climateinvestmentfunds.org/>)
 - The CIFs consist of the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF). The SCF will provide financing to pilot new development approaches or to scale-up activities aimed at a specific climate change challenge through targeted programs. The first program to be included in the SCF would pilot national level actions for enhancing climate resilience in a few highly vulnerable countries
- Adaptation Fund (<https://www.adaptation-fund.org/>)
- Clean Development Mechanism (<https://cdm.unfccc.int/>)
- Global Environment Facility (<https://www.thegef.org/>)
 - Small Grants Programme, US\$50,000;
 - Medium Scale Projects, up to US\$2m;
 - Full-Sized Projects, >US\$2m

The GCF will be the largest single source of climate finance...discussed in detail in this talk

Climate Fund Capitalisations



GCF programming – the Board’s guiding principles



All Non-Annex 1 countries (of Botswana is part) are eligible, in principle, for GCF support



GCF investment framework – six high-level criteria





GCF investment framework – mitigation

Mitigation Paradigm Shift Objective:
Shift to low-emission sustainable development pathways

Core Indicators:

- **tCO₂e reduced**
- **Cost per tCO₂e**
- **Volume of finance leveraged for GCF support**

Fund-Level Impact Results Areas

Reduced emissions through increased low-emission **energy access and power generation**

Reduced emissions through increased access to low-emission **transport**

Reduced emissions from **buildings, cities, industries and appliances**

Reduced emissions from **land-use, deforestation**, forest degradation and through sustainable management of forests



GCF investment framework – adaptation

Mitigation Paradigm Shift Objective:
Increased climate-resilient sustainable development

Core Indicators:

- **Total number of direct and indirect beneficiaries (absolute and relative to the total population)**

Fund-Level Impact Results Areas

Increased **resilience** and enhanced **livelihoods** for the most vulnerable people, communities and regions

Increased resilience of **health** and well-being, and **food and water security**

Increased resilience of **infrastructure** and the built environment to climate change threats

Improved resilience of **ecosystems** and ecosystem services

...Back to Global Environment Facility (GEF)



GEF Focal Areas

- 1) Biodiversity
- 2) Climate Change
- 3) International Waters
- 4) Land Degradation
- 5) Chemicals and Waste
- 6) Sustainable Forest Management

With GEF focal areas taken together, global result framework and targets (which show that agriculture and climate change should not be viewed in isolation, but as part of the SDGs) are...

Results	Targets ³
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	<ul style="list-style-type: none"> • Improved management of landscapes and seascapes covering 300 million hectares
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	<ul style="list-style-type: none"> • 120 million hectares under sustainable land management.
3. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services	<ul style="list-style-type: none"> • Water-Food-Energy-Ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins; • 20% of globally over-exploited fisheries (by volume) moved to more sustainable levels
4. Support to transformational shifts towards a low-emission and resilient development path	<ul style="list-style-type: none"> • 750 million tons of CO2 equivalent mitigated
5. Increase in Phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern.	<ul style="list-style-type: none"> • Disposal of 80,000 tons of POPs (PCB, obsolete pesticides) • Reduction of 1000 tons of Mercury • Phase-out of 303.44 tons of ODP (HCFC)
6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream (MEAs) into national and sub-national policy, planning financial and legal frameworks.	<ul style="list-style-type: none"> • Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries • Functional environmental information systems are established to support decision-making in at least 10 countries

Ref: GEF programming for GEF-6

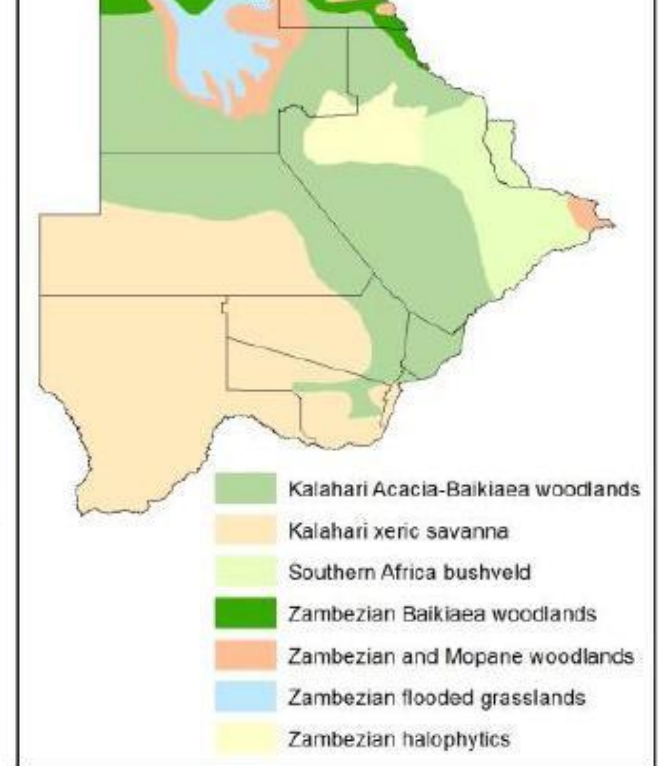
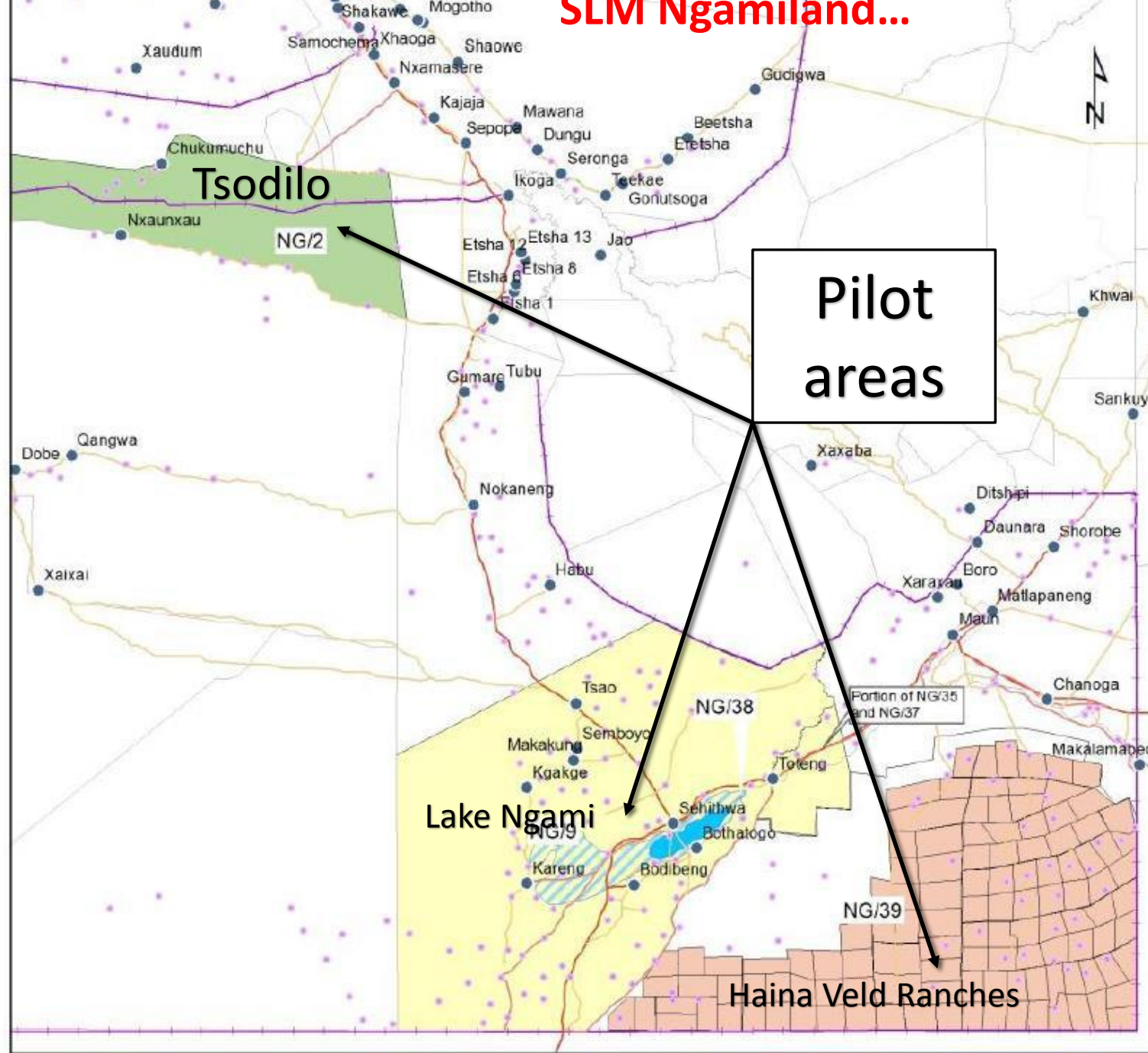
GEF/R.6/20/Rev.02
February 24, 2014



In Botswana, ongoing are x3 GEF/UNDP-funded projects with a bearing on agricultural productivity and climate change

- 1) Sustainable Land Management – Ngamiland (SLM Ngamiland)
- 2) Sustainable Land Management – Makgadikgadi (SLM Makgadikgadi)
- 3) BioChobe

SLM Ngamiland...



Data sources:

ODIS / ORI
Ecosurv
DWNP
BRIMP





Project Interventions

Component 1: Improve Range Management

- Develop local level land use plans
- Diversify livelihood options
- Develop and pilot fire management strategy
- Monitor the range

Component 2: Improve market incentives for livestock offtake and resource governance

- Setup multi-stakeholder to dialogue SLM issues
- Explore markets for Ngamiland beef & non beef products



Conservation Agriculture (CA) Support

CA equipment worth US\$61 000.00 has been purchased and handed over by UNDP to the Department of Crop Production (DCP)

DCP has since delivered the equipment to where it will be used in the pilot areas targeting 60 Subsistence Farmers in the 2016/17 ploughing season.



Reduce Bush fires

Both edible & non edible veld products lost due to frequent & uncontrolled bush fires

- 12 village Fire fighting teams established
- 480 Community members trained in fire fighting techniques
- Fire fighting equipment valued at USD 33 000 has been purchased and handed over to the Department of Forestry and Range Resources to be used to fight fires.



Planned Activities

Support to Lake Ngami Conservation

- Fisheries management

Support to Conservation Agriculture Farmers

- Provision of live fences to for farmers to reduce crop damage
- On farm training through Farmer's field days

Support to Pastoral Farmers

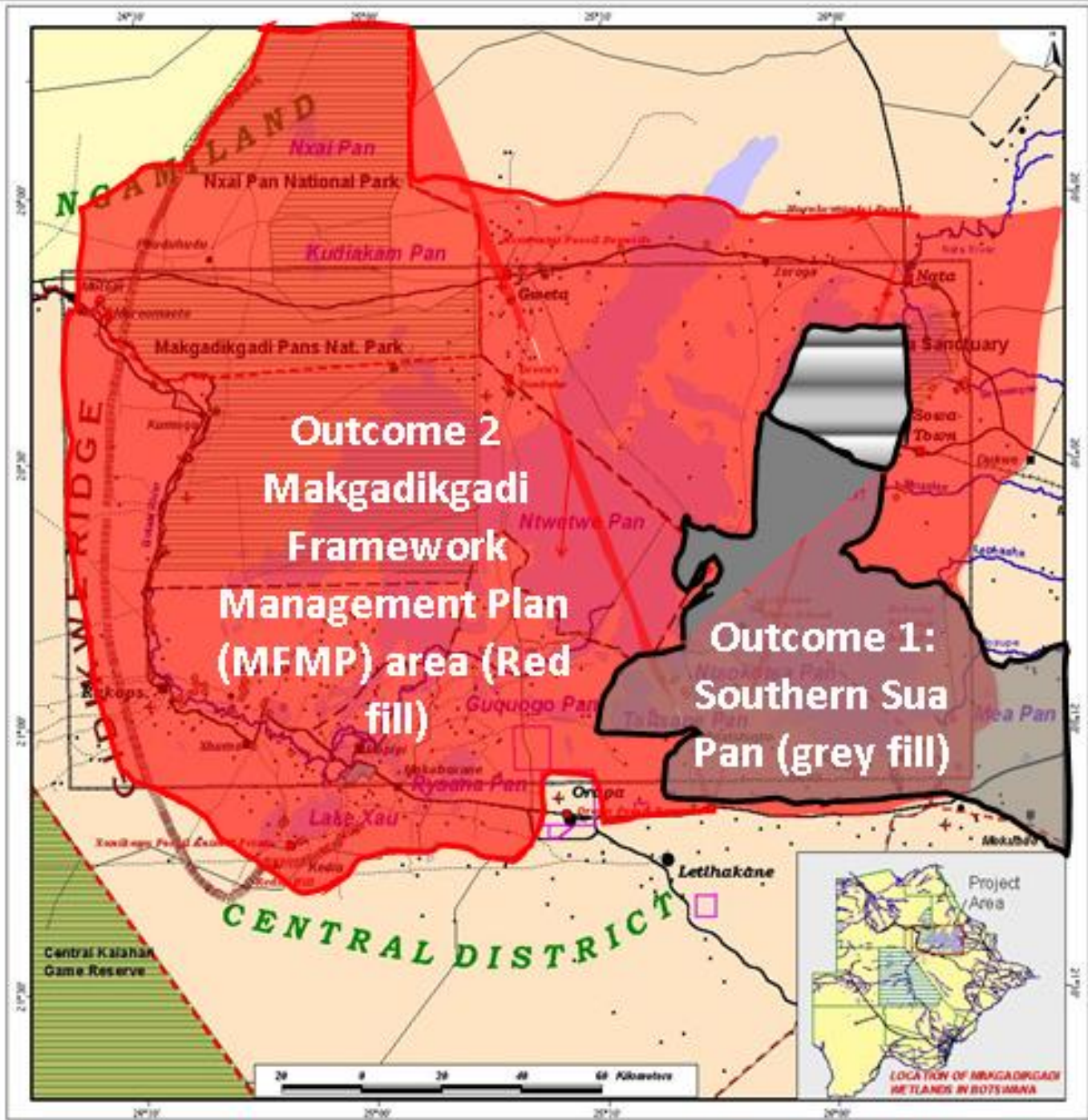
- On farm training through Farmer's field days



SLM Makgadikgadi project aims to:

remove these barriers by supporting communities to mainstream SLM principles into the Sub-district-wide land-use planning,

...and into both livestock production (through strengthening Farmer's Associations and providing through them technical backstopping to enable farmers to improve livestock productivity whilst enhancing rangeland conditions) and arable farming (through conservation agriculture).



SITE INVENTORY OF MAKGADIKGADI PALUSTRINE WETLANDS

FIGURE 5.1 BASE MAP
MAKGADIKGADI WETLANDS

LEGEND

Settlement (by population)

- Small Locality (<200)
- 200 - 1000
- 1000 - 2000
- 2000 - 5000
- 5000 - 15000

--- District boundary
--- Subdistrict boundary
--- Veterinary fence
--- Proposed fence

□ Mining area
● Museum site (protected)
● Historical/Archeological site
● Tourism Facility

+ Airfield
— Main Road
--- Minor road
--- Railroad

▲ Flowstation
— Main River
■ Mopipi Dam

■ Park/Reserve/Sanctuary
■ Pan
▲ Kedia Hill
— Gidike Sandridge

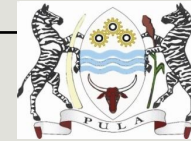
--- Makgadikgadi Wetlands Area (Study Area) Boundary

SEPT 2002

CLIENT: SACN ROSA & NCA Botswana	DATE: Prepared: 07.02.02 Updated: March 2002 (revised) Date of revision: 04.02.02
CONSULTANT: Ecologic Support Services	Author: Sally Munn/Good

The position of any boundary or reporting on this map should not be taken as evidence for the location of any boundary or reporting on this map.

FIGURE 5.1



Outcome 1	Effective resource governance frameworks for SLM and equitable resource access
1.1	Local level land use plans developed for each pilot site (Mmatshumo, Mmea, Mokubilo, and Mosu)
1.2	Improved range management and mixed livelihood systems are piloted in line with the land use plans. (including CA)
1.3	Fire management strategy developed and implemented. (Strategy, Fire Management Committee)
Outcome 2:	Effective range management to improve range condition and flow of ecosystem services to support livelihoods of local communities in Southern Sua Pan Region
2.1	A regional multi-stakeholder forum facilitating a dialogue
2.2	Decision making support tool for Letlhakane sub-land board and physical planning unit (Boteti sub-district council)
2.3	Systems for monitoring of range condition and productivity is in place (MOMS)



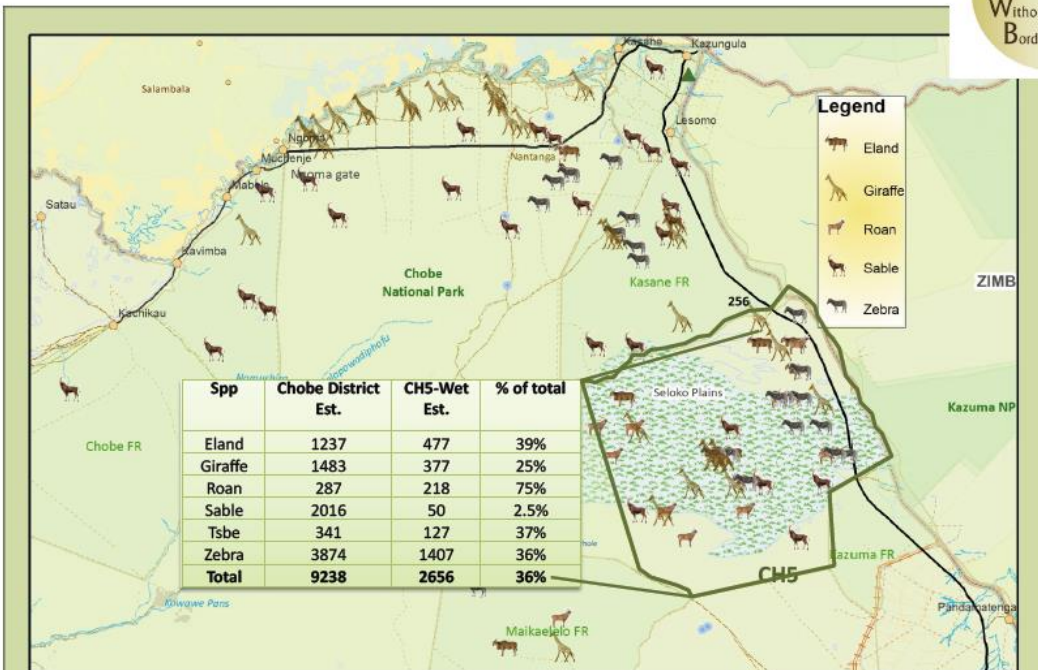
Specifics to Conservation Agriculture (CA)

1. Trained about 120 famers to date on the concepts of SLM, Conservation Agriculture
2. Purchased relevant CA implements, e.g. tractor drawn rippers and animal drawn rippers
3. Provide technical support to initiate the process of practicing CA from the start of the ploughing season

BioChobe...

You cannot do agriculture without factoring in wildlife issues (which is driven by climate change)...

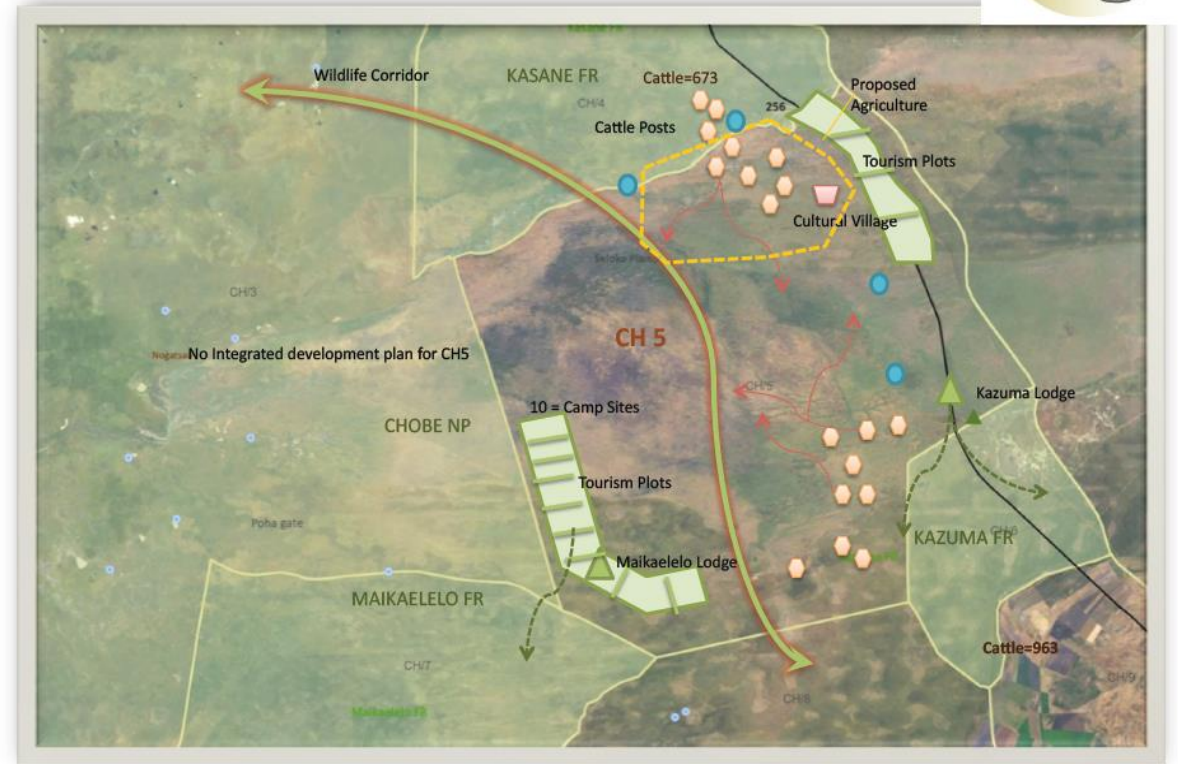
WILDLIFE OBSERVATIONS – CH5 Seloko Plains



Principal wildlife seen on wet season aerial survey
 CH5 spp and wet season estimates
 Eland=477 Roan=218 Zebra=1407
 Giraffe=377 Sable=50 Tsbe=127

Wildlife Observations Wet Season Aerial Survey North East Chobe
 CH 5 Critical Wet Season Habitat

CH 5 - Northern/Seloko Plains



Supporting Small Scale farmers for CA

- Capacity building through exchange learning trip to Zambia, workshops and demonstrations on the use of climate smart agriculture implements
- Supporting small scale farmers with the CA implements/ climate smart agriculture implements
- CA piloted in Chobe West and Chobe East

2015/16 Season

23 small scale farmers piloted CA (19 males and 4 females) instead of 35 targeted.

30.21 HA planted under CA piloting

Harvested tones – 3.55

Production is low because only 7 farmers harvested from their pilot plots

Other farmers lost their produce due to wild animals' destruction, floods, cattle destruction and weed infestation

2016/17 Season

33 farmers instead of a target of 60 used the CA method

65.97 ha ripped

58.65 ha planted (one farmer waited for organic fertilizer and three wanted to plant later but were caught by the heavy rains and their fields submerged)

Farmers losing their crop because some fields are submerging

Other farmers have already lost their crops due to wildlife destruction



Lessons learnt and implications for future climate change work

1) Arable agriculture requires holistic approach by all stakeholders due to challenges such as;

- Human Wildlife Conflict
- High infestation of weeds and insects due to the nature of the environment

Climate change will impact both these factors e.g. as evidenced by expanding elephant ranges, which will increase geographic areas experiencing Human-Elephant Conflict (e.g. elephant near Taupye this morning, 9-March-2017)

2) CA improves production per ha, but need track level of investment (hours spent, resources etc) and compare with conventional methods

3) Farmers in the second year showed more interest in the CA method after learning from others; demonstrates need for medium and long-term investments (not once-offs)

4) A warming climate undoubtedly has a negative effect on crop production and generally reduces yields of staple food crops, making the achievement of SDG#2 (*End hunger, achieve food security and improved nutrition, and promote sustainable agriculture*) quite challenging

District Planning needs to mainstream climate change across all sectors!



Other planned UNDP-funded climate change work and opportunities for collaborations

- 1) up-scaling conservation agriculture in the three pilot projects (GCF-funded); contact us and discuss partnership opportunities
- 2) community climate change actions in Kgalagadi and Ghanzi Districts as part of the *Managing the human-wildlife interface to sustain the flow of agro-ecosystem services and prevent illegal wildlife trafficking in the Kgalagadi and Ghanzi Drylands* project; to commence within next 6 months or so, Project Document being finalised
- 3) finalisation and implementation of the Botswana's climate change strategy and action plan; plan near finalisation, needs resources including partnerships to be mobilised; farmers should also identify opportunities within this strategic plan



Acknowledgments

- Government of Botswana (especially lead ministries and partners on the aforementioned projects)
- United Nations Development Programme – Botswana Country Office
- Global Environment Facility
- Beneficiary communities
- Project Managers for the aforementioned projects
 - Rosina Masilo-Rakgoasi, Bio-Chobe
 - Motshereganyi Kootsositse, SLM Makgadikgadi
 - Innocent Magole, SLM Ngamiland



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To know more about UNDP-funded climate change programmes, contact:

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