SASSCAL

Southern African
Science Service Centre for
Climate Change and
Adaptive Land Management

PASSPORT

Republic of Zambia

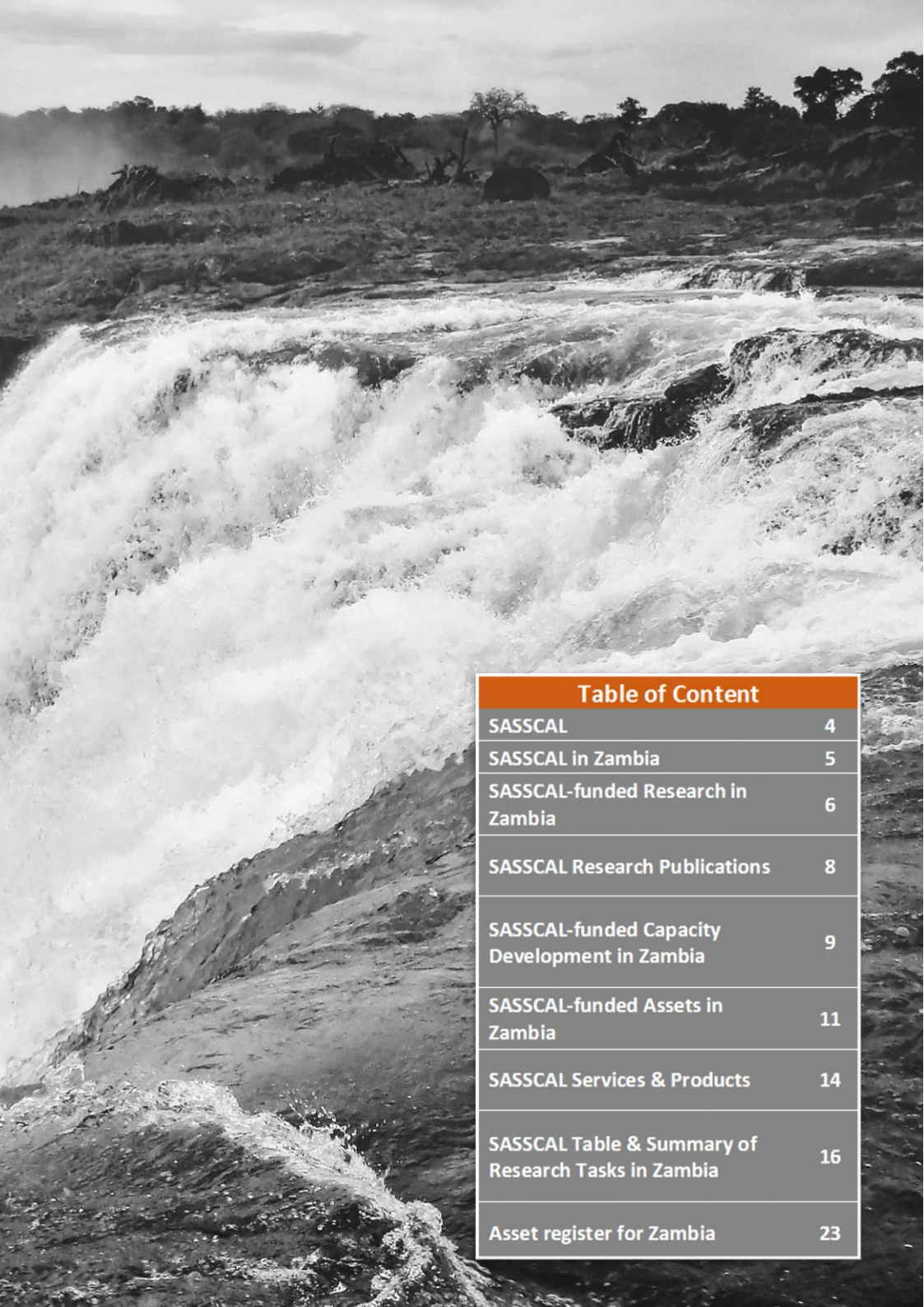


Table of Content

SASSCAL

Southern African
Science Service Centre for
Climate Change and
Adaptive Land Management

SASSCAL is a joint initiative of Angola, Botswana, Namibia,
South Africa, Zambia and Germany
in response to the challenges of global change

Vision

To be a leading regional centre in integrated climate change and adaptive land management science services for improved quality of life in southern Africa

Mission

To strengthen the regional capacity to generate and use scientific knowledge products and services for decision making on climate change and adaptive land management through research management, human capital development and services brokerage

Objectives

- to conduct research in adaptation to climate change and for sustainable land management
- to provide products, services and information for decision-making
- to contribute to the creation of a knowledge-based society through academic and non-academic capacity development programmes

RESEARCH

SERVICES & PRODUCTS

CAPACITY DEVELOPMENT

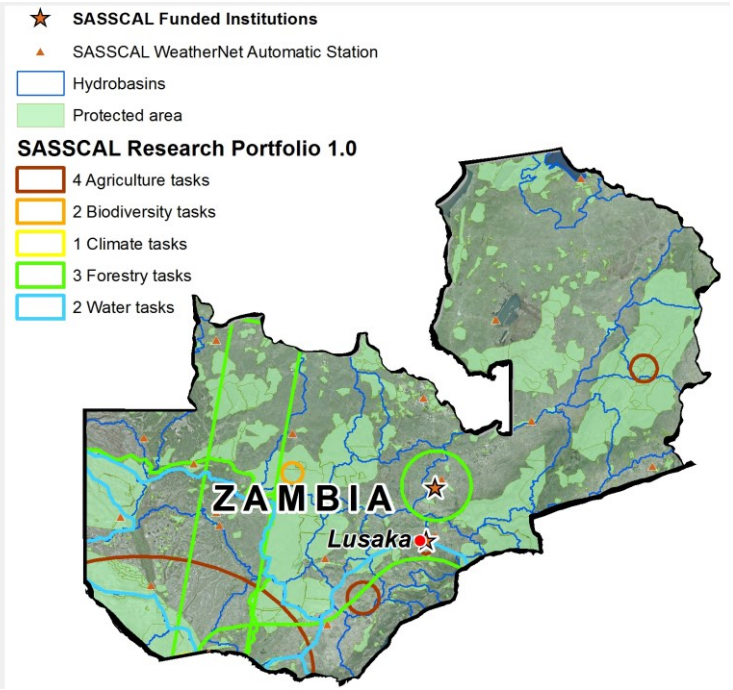
SASSCAL in Zambia

SASSCAL was initially established as the Regional Science Service Centre (RSSC) in Windhoek in 2010. By 2014, the SASSCAL Regional Secretariat was established in Windhoek. The National Executing Agency of SASSCAL in Zambia is the National Remote Sensing Centre.

In Zambia, SASSCAL's Mission, to strengthen the regional capacity and to generate and use scientific knowledge products and services for decision making on climate change and adaptive land management, was achieved through SASSCAL's Research Portfolio 1.0, from 2012 to 2018, and facilitated by the SASSCAL Node in Zambia.

SASSCAL-funded Research in Zambia

The map gives an overview of SASSCAL-funded research activities in Zambia:



The SASSCAL-funded Research Portfolio in Zambia, from 2012 to 2018, constituted 14 projects, referred to as tasks. The total budget for these tasks was € 4 030 446.49.

Tasks are performed under the leadership of ten national partners:

- Centre for Environmental Research Education and Development (CERED) (Task 221)
- Department of National Parks and Wildlife (DNPW) (Task 189, 190)
- Forestry Department (FD) (Task 182)
- Mulungushi University (MU) (Task 188, 163)
- National Remote Sensing Centre (NRSC) (Task 151)
- University of Zambia (UNZA) (Task 109, 191)
- Zambia Agricultural Research Institute (ZARI) (Task 157)
- Zambia Air Services Training Institute (ZASTI) (Task 300)
- Zambia Community Based Natural Resource Management Forum (ZCBNRM) (Task 302)
- Zambia Meteorological Department (ZMD) (Task 187)

Other partners in Zambia task consortiums were:

Council for Scientific and Industrial Research (CSIR)
South African National Space Agency (SANSA)
Department of Agriculture
Seed Control and Certification Institute
Zambia Forestry College (ZFC)
Zambia Bureau of Standards (ZABS)
Food and Drugs Control Laboratory
North-Western Province Beekeepers Association
Kasamba Honey Company
Mpongwe Beekeeping Company
Botswana College of Agriculture (BCA)
Integrated Rural Development and Nature Conservation
Kapitango Village Community
Kalongola Village Community
Mayukwayukwa Refugee Camp Community
Zambia Association of Timber and Forestry Based Industries
Copperbelt University
Chibande Community Resource Board
Chibande Royal Establishment
Chitungulu Community Resource Board
Chitungulu Royal Establishment
Fisheries Department
Kazembe Community Resource Board
Kazembe Royal Establishment
Lundazi District Council
Lundazi Gemstone Association
Ministry of Agriculture and Livestock
Ministry of Chiefs and Traditional Affairs
Ministry of Mines, Energy and Water Development
Mwanya Community Resource Board
Mwanya Royal Establishment
National Heritage and Conservation Commission
Friedrich Schiller University of Jena
Technical Education and Vocational Training Authority (TEVETA)
World Meteorological Organisation (WMO)
Zambia Airports Corporation Limited (ZACL)
Department of Maritime and Inland Waterways
Ministry of Transport and Communications
German Weather Services (DWD)
United Nations Development Programme (UNDP)
Food and Agricultural Organisation

SASSCAL IN ZAMBIA

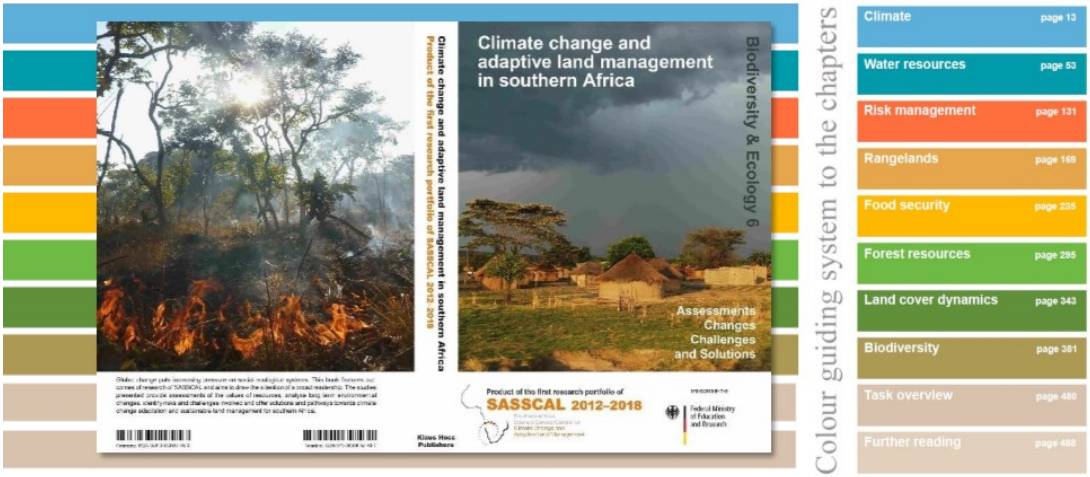
14 SASSCAL-funded projects
€ 4 030 446.49
10 Institutions
179 Individuals (excluding students)

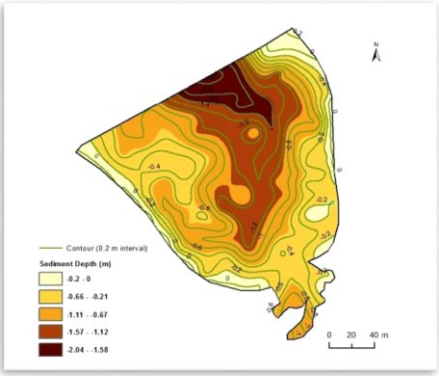
SASSCAL Research Publications

The SASSCAL Book, a culmination of six years of SASSCAL funded research, was launched at the SASSCAL Symposium in Lusaka in April 2018. The book is entitled "Climate change and adaptive land management in southern Africa – assessments, changes, challenges, and solutions", edited by Revermann, R., Krewenka, K.M., Schmiedel, U., Olwoch, J.M., Helmschrot, J. & Jürgens, N. and published in the book series Biodiversity & Ecology, Vol. 6, Klaus Hess Publishers, Göttingen & Windhoek.

The Book is freely available for download:
WWW.BIODIVERSITY-PLANTS.DE/BIODIVERS_ECOL/VOL6.PHP

Zambian SASSCAL partners authored four of the publications featured in the SASSCAL Book, contributed to six publications and further contributed to five thematic chapter in the book.





In addition to the SASSCAL Book, SASSCAL-funded researchers in Zambia published 64 publications in total. These include 14 publications in peer reviewed journals, 26 dissertations and 20 other publications (including reports, manuals, guidelines, management plans, operating procedures and presentations at conferences). Zambia researchers also contributed to the SASSCAL Newsletter (**WWW.SASSCAL.ORG/NEWSLETTERS/**).

Sediment map for Chifwepa dam based on topo to raster model (SASSCAL Newsletter June 2017

SASSCAL-funded Capacity Development in Zambia

Capacity building through the projects in Zambia was achieved at 3 different levels. Firstly, training programmes that met identified individual capacity development and community resource needs were developed. Secondly, institutional capacity was developed and strengthened through staff from partner and other related institutions who were enrolled in climate change and land management related academic programmes. The training programmes included Master and Doctor of Philosophy programmes. Lastly, infrastructural capacity development through partner institutions which were supported with the necessary equipment and infrastructure that developed and strengthened their capacity to conduct research and long-term activities.

Training Programmes

Two training programmes were developed and accredited by the Technical Education and Vocational Training Authority (TEVETA). The Diploma in Meteorology and Certificate in Para-ecology were developed by the Zambia Air Service Training Institute (Task 300) and the Zambia Community Based Natural Resource Management Forum (Task 302) respectively. 20 students were trained in Meteorology and an additional 40 from Zambia Meteorological Department. The Department of Agriculture and other related institutions were trained in refresher and tailor-made weather observation and agrometeorology courses at the Zambia Air Services Training Institute. 30 para-ecologists were trained during the project implementation period at the Zambia Forestry College. Technical staff and community members were trained through various training workshops and courses including modelling, weather equipment repair and maintenance, data digitisation and validation, data analysis, beekeeping and honey production, fire management and local quality seed production among others. Training workshops in climate and hydrological modelling were delivered by the German Climate Service Centre in collaboration with the Friedrich Schiller University of Jena and drew participation from the University of Zambia, Water Resource Management Authority, Zambia Electricity Supply Corporation and the Zambia Meteorological Department. These specialist specialised training events have strengthened that national capacity towards dialogues in regional and internal climate change landscape.

The Mulungushi University conducted several training workshops for beekeepers.

SASSCAL training workshop on climate and hydrological modelling at University of Lusaka

Beekeeping technologies that were developed by the Bee Research Centre were transferred to the beekeepers with the aim of enhancing the productivity of their beekeeping activities. Enhanced productivity of beekeeping activities to levels that can ensure sustainable livelihoods could serve as an alternative to unsustainable practices that contribute to climate change and environmental degradation such as charcoal production and shifting cultivation (locally known as chitemene). Communities surrounding the permanent monitoring plots where the Forestry Department carried out their regeneration activities and experiments participated in the management of these sites and were trained in fire management. Information pamphlets were developed and translated into the local language to create awareness among the local communities on sustainable forest resource utilisation practices. 60 lead farmers were trained by the Zambia Agricultural Research Institute in local quality seed production. The trained farmers participated in the pilot on farm characterisation and multiplication of selected locally adapted seed varieties.

The *Collaborative Master Degree in Earth Observation, GIS and Remote Sensing* (Task 303) that was developed under the coordination of the Namibia University of Science and Technology (NUST), in cooperation with Cape Peninsula University of Technology (CPUT), the University of Botswana (UB) and the University of Zambia (UNZA). was launched at the University of Zambia in June 2017. A total of 21 students were enrolled with two international students from Botswana and Angola. 11 of the these MSc students are fully funded by SASSCAL.

SASSCAL-funded Training through the Zambian Research Portfolio

Through SASSCAL funding, 38 students were sponsored to study towards various degree and diploma programmes (7 are yet to complete their studies):

Five PhD students (1 has graduated from the University of Hamburg, Germany in October 2017, 2 are in their final stages and the other 2 are expected to complete their studies in 2019), 24 Master students (21 have completed and 3 are finalising their studies), 3 were awarded their Bachelors degrees in 2017 and 6 completed their diploma studies in 2017.

All students that are still studying are in their final stages of their studies except for the 2 PhD students that are expected to complete their studies in 2019.

Capacity building in bee-keeping and honey production value-chain, SASSCAL Newsletter June 2017

SASSCAL –funded Assets

SASSCAL's contribution to the southern African region, through the SASSCAL-funded Research Portfolio, also impacted the available research infrastructure.

The SASSCAL WeatherNet

A total of 19 automatic weather stations (AWS) of the total 154 AWS of the SASSCAL WeatherNet, are strategically distributed in Zambia., to fill gaps in the national network The installation of the AWS was part of Task 187, *To expand, modernise and improve weather observation and forecasting in Zambia*. The weather network was improved and modernised by replacing manual weather equipment with modern automatic equipment. The weather observation network was further expanded by installing equipment in new sites. Some of the sites where the equipment was installed are part of a biodiversity monitoring site ,which is part of the long-term monitoring biodiversity monitoring sites established across the SASSCAL member countries.

(bottom) The AWS at in Kalomo and (right) SASSCAL WeatherNet AWS in Zambia

All data transmitted by these stations are made available in near real-time on the online SASSCAL WeatherNet (**WWW. SASSCALWEATHERNET.ORG**) and are freely accessible. The stations transmit hourly rainfall, air and soil temperature, humidity, wind speed and direction, barometric pressure, solar radiation, leaf wetness and other sensor data.

In addition to the installation of AWSs, the Zambia Meteorological Department, with the support of the DWD (Deutscher Wetterdienst, Task 123 *Historical and ongoing climate data management*), sourced historical weather data from weather stations distributed across the country. This data has been archived and the data archive has been systematically organised to improve access and secure the paper records. Furthermore, each of the organised records were imaged, digitised and validated. This, in addition to the training of staff, has enhanced the data management, early warning and modelling capabilities of the Zambia Meteorological Department.

Vehicles, boats, field and research equipment

Two four-wheel drive motor vehicles were procured by the Zambia Node for use by the researchers. The vehicles were made available to research teams upon request. The vehicles, which include three boats, also procured with SASSCAL funding, enabled project teams to reach research sites in remote parts of the country. In addition to motor vehicles and boats, various specialised equipment was procured.

One of the two research vehicles procured by the Zambia node (left) and (top) inflatable boat acquired by the Department of Geography and Environmental Studies, University of Zambia

In addition to the inflatable boat, the University of Zambia procured an automated remote controlled boat, which is used to survey small dams. It enabled the research team

to collect data that cannot be collected due to inaccessibility and the amount of time required to manually collect the data. Bathymetric profiles of the surveyed dams were derived from the collected data and accurate reservoir capacities were determined which are important for planning, dam and reservoir management. The Integrated Water Resource Management Centre at the University of Zambia also procured an XRF analyser. This equipment enabled them to record mineralogical measurements on site and reduced the number of samples that had to be collected and the associated costs of transportation and analysis.

Training and hand-over of the Coden Hydrographic Survey Remote Controlled Boat - Model RC2-S2 (OmniSTAR-Type) by the supplier

A fully equipped Bee Research Centre and a fertiliser recommendations laboratory were established at the Mulungushi University. The laboratory building was refurbished, and a complete set of new equipment was installed. The fertiliser recommendations laboratory is still undergoing an accreditation process and when operating fully at a commercial basis, will provide soil analytical and plant nutrition recommendation services to the Farming communities in the Central Province of Zambia.

(top left) experimental setup of the suspended hive design,

(bottom left) Mulungushi University laboratory showing part of the honey filling and processing equipment

SASSCAL Services & Products

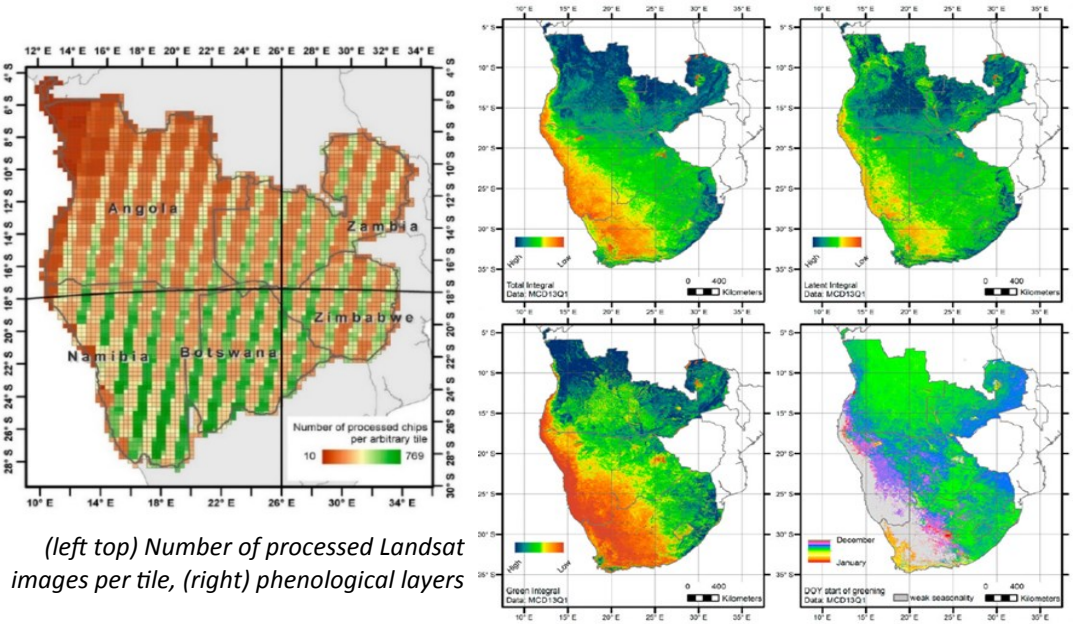
SASSCAL ensures that the research deliverables resulting through the SASSCAL-funded Research Portfolio, are made available openly and free of charge.

All research publications and deliverables, from all SASSCAL-funded research, will be accessible via the ***SASSCAL Data and Information Portal***:

WWW.SASSCAL.ORG/SASSCAL-DATA-AND-INFORMATION-PORTAL/

It is noteworthy to highlight that besides the invaluable research results stemming from the Zambia portfolio, deliverables from other SASSCAL research of interest to Zambian partners include, but are not limited to:

- Full Landsat archive processed to surface reflectance (This data collection contains 1 912 733 images stored in 4 524 tiles of 30 x 30 km2 (28 TB)) (University of Trier)
- 4 Phenological metrics for SASSCAL countries: total integral, related to overall biomass, latent integral associated with standing biomass, green integral, day of year of start of greening (University of Trier)
- Fire regime related parameters from 2000 to 2015: fire frequency, seasonality and intensity (University of Trier)
- Woody tree cover map (CSIR)

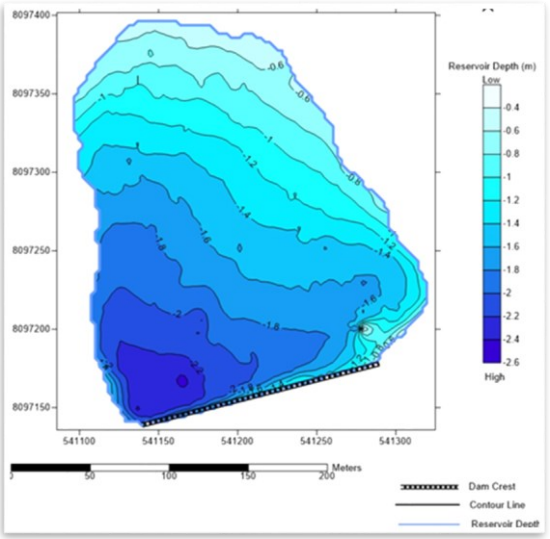


(left top) Number of processed Landsat images per tile, (right) phenological layers

- Global Urban Footprint (DLR)
- Regional Climate Change Projections for CORDEX-Africa (GERICS)
- EasyRemo climate modelling software (GERICS)

Some deliverables of the SASSCAL-funded research in Zambia include, but are not limited to:

- A database of 207 small dams in Southern and Lusaka provinces, which include bathymetric profiles, water holding capacities and estimated dam life.
- A nationwide seamless land use and land cover map for Zambia was developed by the National Remote Sensing Centre
- Locally adapted cow pea and maize seed varieties that have been registered as certified seed by the Seed Certification and Control Institute
- Beekeeping and honey production management and training manuals were published by the Bee Keeping Research Centre at Mulungushi University



Bathymetric map of the Vwavwa dam in the Southern province of Zambia

- A database of Zambia's biodiversity and various taxonomic checklists was developed by the University of Zambia's Department of Geography and Environmental studies
- A fertiliser recommendations laboratory was established at Mulungushi University and is undergoing the accreditation process
- Biodiversity monitoring manuals were developed for long term monitoring of the Busanga swamps, a RAMSAR listed site
- A general management plan for the Lumimba Game Management Area was developed by the Department of National Parks and Wildlife and was approved by the Minister and endorsed by the local authorities
- A water quality and quantity database for the Barotse basin was developed by the Integrated Water Resource Management Centre

Task ID	Task Name	Lead	Budget (Euro)
	Agriculture		
151	Develop and improve integrated national and seamless regional land use assessment	NRSC	€ 180 095.00
157	Building capacity for seed testing and monitoring of germplasm accessions held in the gene bank	ZARI	€ 199 780.00
188	Establishing a soil analysis laboratory for training Capacity building and service provision	MU	€ 572 804.00
190	Conflicting land use (Agriculture Vs Wildlife)	DNPW	€ 80 930.00
	Biodiversity		
184	Baseline inventory of Zambia's biodiversity	UNZA	€ 484 127.00
189	Biodiversity monitoring and assessment programme for Busanga Swamps, Zambia	DNPW	€ 210 020.00
	Capacity Development		
300	Capacity building for providing training in climate change related courses	ZASTI	€ 112 290.01
302	Strengthening community capacity to collect and analyse data for management decisions in research based projects	ZCBNRM	€ 252 462.00
	Climate		
187	Expand, modernize and improve weather observation network, improve forecasting in Zambia	ZMD	€ 284 552.50
	Forestry		
163	Capacity Building in Bee-keeping and honey production value-chain	MU	€ 342 085.00
182	Management of the Zambezi Teak Baikiaea plurijuga forests and other associated woodlands in Western Zambia in a changing climatic regime.	FD	€ 245 954.00

Task ID	Task Name	Lead	Budget (Euro)
221	Forest resource assessment in the Mopane (Colophospermum) eco-region	CERED	€ 130 339.98
	Water		
109	Understanding the burden of Sediment on ecosystems and national economy	UNZA	€ 625 748.00
191	Developing water quantity and quality database for western Zambia	UNZA	€ 309 259.00
			€ 4 030 446.49

Summary of Tasks

Task 109 - UNZA (€ 625 748.00)

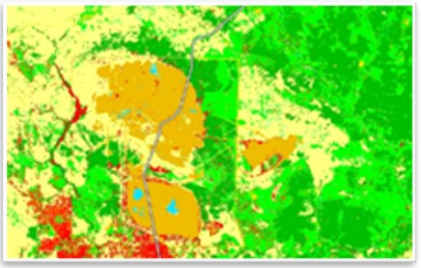
Understanding the burden of Sediment on ecosystems and national economy

- A comprehensive database of 207 small dams was developed that will contribute to improving water resource management data and information required for water resource management in Zambia and the southern African region
- Over 207 dams were surveyed and their bathymetric profiles, water holding capacities and estimated dam life characterised

Task 151 – NRSC (€ 180 095.00)

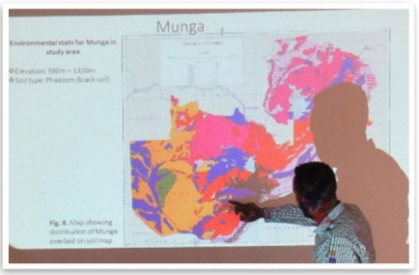
Develop and improve integrated national and seamless regional land use assessment

- A nationwide seamless land use and land cover map was developed



3 Master
3 Publications

- A deformation geodetic monitoring system for the Kariba dam and a unified countrywide coordinate system for Zambia was established



Task 157 – ZARI (€ 199 780.00)

Building capacity for seed testing and monitoring of germplasm accessions held in the gene bank

1 Publications
60 lead farmers trained

- Suitable varieties of cow pea and maize were selected, characterised and distributed to lead farmer
- Lead farmers were trained in quality participatory seed production
- Suitability of conservation agriculture was evaluated under different environmental and growing conditions

Task 163 – MU (€ 342 085.00)

Capacity Building in Beekeeping and honey production value-chain

- A fully functional and commercially viable Bee Research Centre was established
- New technologies have been developed that have the potential to enhance the productivity of beekeeping and the honey production

1 PhD
1 Publications

Task 182 – FD (€ 245 954.00)

Management of the Zambezi Teak *Baikiaea plurijuga* forests and other associated woodlands in Western Zambia in a changing climatic regime

- Regeneration studies were conducted in permanent sampling plots that were established in selected districts and included the regeneration of *Baikieae plurijuga* and associated species
- A conservation plan for *Chryptosepalum* was developed for the forest
- A management plan for *Baikieae plurijuga* and associated woodlands was commenced

5 Permanent sampling plots
15 community members trained in fire management

Task 184 – UNZA (€ 484 127.00)

Baseline inventory of Zambia's biodiversity

- Annotated checklists
- A database of Zambia's biological diversity

7 Master
1 Publications

GROUP OF ORGANISMS	NUMBER OF SPECIES		
	1998 BSAP Report		SASSCAL Task 184 Study
	Reported	Actual	Actual
Lower Plants:			
1. Algae.	147	143	357
2. Mosses (Bryophyte).	129	129	129
3. Ferns (Pteridophyte).	142	142	153
Total	418	414	649
Higher Plants:			
	530	526	530
	397	381	397
	140	132	140
erbs.	593	586	593
ous Woody Plants	1,441	1,306	1,500
perms).			
Woody Plants	169	168	169
perms)			
ed plants (Crops)	100	94	-
Total	3,370	3,193	3,329
s (Sponges)	0		
s (Cnidarians)	3		
min thes			
erms)			
ide			

GROUP OF ORGANISMS	NUMBER OF SPECIES		
	1998 BSAP Report		SASSCAL Task 184 Study
	Reported	Actual	Actual
Vertebrates:			
1. Amphibians (Frogs, newts and Salamanders)	67	67	74
2. Reptiles	150	150	156
3. Fish			
Protopteridae	2	2	2
Mormyridae	20	20	24
Kneriidae	4	4	4
Characidae	17	17	21
Hepsetidae	1	1	1
Dinchondontidae	10	10	14
Cyprinidae	79	79	93
Schilbeidae	5	5	8
Clariidae	17	17	17
Mochokidae	25	25	
Bagridae	20		
Aplocheilidae			
Poeciliidae			
Cichlidae			

Task 187 – ZMD (€ 284 552.50)

Expand, modernize and improve weather observation network, improve forecasting in Zambia

- Improved weather forecasting, reporting and early warning
- Enhance capabilities in climate modelling and prediction

- Improved weather data, records and information management
- A modern and expanded weather observation network

3 Master
3 Bachelor
3 Diploma

Task 188 – MU (€ 572 804.00)

Establishing a soil analysis laboratory for training Capacity building and service provision

- A fully functional fertiliser recommendations laboratory
- Guidelines for soil and plant analysis that will serve as standard operating procedure for the fertiliser recommendations laboratory was developed

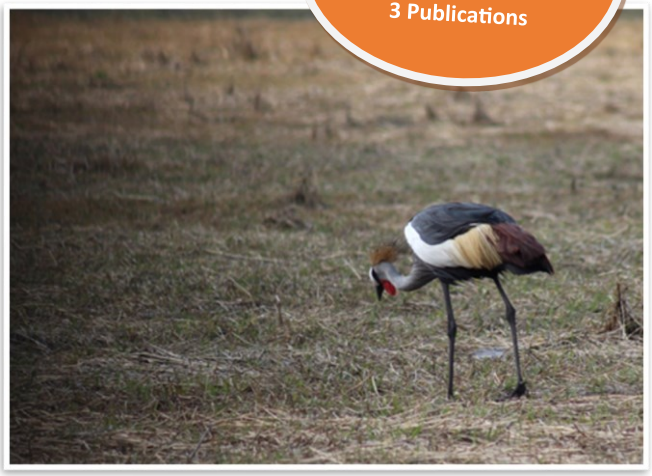
1 PhD
1 Master

Task 189 – DNPW (€ 210 020.00)

Biodiversity monitoring and assessment programme for Busanga Swamps, Zambia

- A monitoring and assessment plan including monitoring manuals for the Busanga swamps using small mammal, water fowls, beetles, higher plants and land use and land cover change as ecological integrity indicators
- The extent of the Busanga swamps was delineated
- Biodiversity inventories of small mammals, water fowls, higher plants and beetles

1 PhD
2 Master
3 Diploma
3 Publications



Task 190 – DNPW (€ 80 930.00)

Conflicting landuse (Agriculture Vs Wildlife)

1 Master
2 Publications

- A game management plan for the Lumimba Game Management Area was developed

Task 191 – UNZA (€ 309 259.00)

Developing water quantity and quality database for western Zambia

1 PhD
5 Master
4 Publications

- A complete water quality and quantity database of the Barotse basin was established
- Criteria and indicators were developed for assessment of water quality and quantity
- The sediment loading and flooding regimes were characterised

Task 221 – CERED (€ 130 339.98)

Forest resource assessment in the Mopane (Colophospermum) eco-region

- Characterised forest cover within the *Colophospermum mopane* ecosystem in Zambia
- Awareness among the communities within the Mopane ecosystem on the

dangers of deforestation and forest degradation was raised

- Alternative livelihood options that are directly linked to the *Colophospermum mopane* ecosystem were identified

Task 300 – ZASTI (€ 112 290.01)

Capacity building for providing training in climate change related courses

- The curriculum for a diploma in meteorology and a training programme, accredited by the Technical Education and Vocational Training Authority was developed
- Tailor made and refresher courses in weather forecasting and agrometeorology were developed

Task 302– ZCBNRM (€ 252 462.00)

Strengthening community capacity to collect and analyse data for management decisions in research based projects

- Curriculum and accredited training programme for para-ecologists was developed
- Improved data collection and management, to support the management of oriented monitoring systems (MOMS), in selected sites

30 para-ecologists

Asset register for Zambia

Institution	Asset specification	#	Location
Camera			
CERED	Camera	1	CERED Offices
UNZA	Camera	1	UNZA
DNPW	Nikon DSLR twin bundle	1	DNPW-Chunga
DNPW	Canon 650D DSLR twin lens bundle	1	DNPW-Hq
Field equipment			
CERED	GPS	2	CERED Offices
NRSC	Pentax GPS G3100 -R1	2	NRSC store room
UNZA	GPSmap 78s	2	UNZA
CERED	Grip Distance Reader	1	CERED Offices
DNPW	Comet Binoculars	1	DNPW-Chunga
UNZA	Camp Mania 4 men and Tent Gemsbok Bow 3mx	1	UNZA
UNZA	Coleman Extreme 66L Cooler	1	UNZA
UNZA	Mattresses	10	UNZA
Hardware			
CERED	Laptop	1	CERED
CERED	Printer	2	CERED
CERED	Monitor	1	CERED
CERED	Computer Hard Drive	1	CERED
NRSC	HP Compaq Laptop 17"	4	NRSC
NRSC	HP Compaq Laptop 15"	3	NRSC
NRSC	HP Computer	3	NRSC
NRSC	FUJITSU Server Primergy TX 300 S8	1	NRSC
NRSC	Server cabinet	1	NRSC
ZMD	HP Desktop computer	2	UNZA
ZMD	HP ProBook 4740s laptop	1	UNZA
ZMD	CPU	1	UNZA
ZMD	Monitor	1	UNZA
ZMD	Key board	1	UNZA
ZMD	Laptop	1	ZMD
ZMD	Printer- LaserJet Pro 300 Colour M351a	1	UNZA
UNZA	Panasonic Tough Book	2	UNZA

Institution	Asset specification	#	Location
UNZA	Desktop computer	2	UNZA
UNZA	HP 3500mt Desktop Computer CPU	1	UNZA
UNZA	HP Enterprise 600 Printer	1	UNZA
UNZA	HP Scanjet 5590	1	UNZA
ZCBNRM	HP 6570 ProBook	1	ZCBNRM
ZCBNRM	HP Laptop	2	ZCBNRM
ZCBNRM	Projector	2	ZCBNRM
NRSC	Ashtec Mobile Mapper 10	2	NRSC
UNZA	Printer- LaserJet 100 Colour MFP m175a	1	UNZA
ZASTI	Pro 600 computer	3	Met
ZASTI	Processor Intel i7 3770	1	Classroom
ZASTI	Pull down screen	2	Classrooms
ZASTI	Toshiba laptop	3	ZASTI
ZASTI	UPS APC Back up	2	Met
ZASTI	Monitor 19.5'' 16X9 TFT	16	Classroom
ZASTI	Ncomputing L300 thin clients	16	Classroom
ZASTI	IR 2520 photocopier	1	Met
ZASTI	LaserJet pro 400 printer	1	Met
ZASTI	Lenovo Core iS Laptop ITB HDD, 6GB RAM Win 8.1	1	Chilanga
ZASTI	Lenovo laptop	3	Staff
ZASTI	HP Pro Book 4540S High Performance Business Note Book	1	Chilanga
ZARI	Dell Laptop 13.3" Intel Core i7 8th Gen 16GB Ram/512 GB SSD Windows 10	1	Chilanga
ZARI	Desktop computer	2	Met
ZASTI	Epson projector	2	Classrooms
Sensor/logger			
ZMD	Pyranometer	2	ZMD Hq. office
ZMD	Rain gauge	2	ZMD Hq. office
ZMD	Sensor part for AWS Temp/Humidity	1	ZMD Hq. office
ZMD	Sensor parts of AWS (wind direction)	1	ZMD Hq. office
ZMD	Sensor parts of AWS (wind speed)	1	ZMD Hq. office
ZMD	Soil temp	2	ZMD Hq. office
ZMD	Solar panels	3	ZMD Hq. office

Institution	Asset specification	#	Location
ZMD	Addwave GSM/GPRS Logger	1	ZMD Hq. office
ZMD	Automatic weather station	19	Various sites
ZMD	Barometer	2	ZMD Hq. office
ZMD	Base plate/spikes and Gale wires	15	ZMD Hq. office
Specialised equipment			
UNZA	Microscope	1	UNZA
UNZA	Mooring Kit 5.5Kg	1	UNZA
UNZA	Multiparameter Meter - HI 9829 - 11202	1	UNZA
UNZA	Olympus CX31 Trinocular Microscope	1	UNZA
UNZA	Sedimeter SM3A (plus accessories)	1	UNZA
UNZA	Turbidity Meter - HI 93703C	1	UNZA
UNZA	Water Distiller	1	UNZA
UNZA	XRF Analyzer (Niton)	1	UNZA
Specialised equipment for Honey/Bee keeping hives & laboratory			
MU	Specialised field and laboratory equipment including 101 hives, bee safety attire, 10 bee smokers, 10 temp testers, 6 compound microscopes, 7 microscope binoculars and man more	285	MU SANR lab
Vehicles			
MU	Motorbike-Honda	1	MU
UNZA	Inflatable Boat	1	UNZA
UNZA	Kingfisher 430T Alu. Boat	1	UNZA
UNZA	Mercury 15HP Outboard Engine	1	UNZA
UNZA	Mercury 30Hp 2 Stroke ML Engine	1	UNZA
UNZA	Mercury 5-person Inflatable Boat	1	UNZA
UNZA	2 Stroke Engine 9.9 Hp	1	UNZA
UNZA	Coden Hydrographic Survey Remote Controlled Boat - Model RC2-S2 (OmniSTAR-Type)	1	UNZA
Other			
ZASTI	Whirlpool Air conditioner	4	Gene Bank
ZARI	Air conditioner	3	Classroom
ZASTI	Office desk	2	Met
ZASTI	Low back chairs	20	Classroom
ZARI	Computer desks	20	Classroom
ZASTI	High back office chair	5	Met
ZASTI	Inox Freezer 270L	1	Gene Bank

SASSCAL Governing Board

Zambia Chairperson
Mrs Jane Mubanga Chinkusu
Namibia Vice-Chairperson
Hon Anna N. Shiweda
Angola Board Member
Dr Gabriel Luis Miguel
Botswana Board Member
Mr Felix Monggae
Germany Board Member
Dr René Haak
South Africa Board Member
Dr Yonah Seleti

SASSCAL Regional Secretariat

Executive Director
Dr Jane Olwoch
executive_director@sasscal.org
28 Robert Mugabe Avenue
Windhoek
Namibia

NOTES

SPONSORED BY THE

Federal Ministry
of Education
and Research

SASSCAL
Southern African
Science Service Centre for
Climate Change and
Adaptive Land Management

WWW.SASSCAL.ORG