Annual Report
2018/2019 Financial Year

RESILIENCE IN THE LIMPOPO - OLIFANTS

10/31/2019

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FROM THE AMERICAN PEOPLE

Acknowledgements

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Acronyms and Abbreviations

Agri-SI	Agricultural Support Initiative
AWARD	Association for Water and Rural Development
CBA	Critical Biodiversity Areas
CMA	Catchment Management Agency
CMF	Catchment Management Forum
CPA	Communal Property Association
CSO	Civil Society Organisation
CSO-SI	Civil Society Organisation-Support Initiative
DAFF	Department of Agriculture, Forestry and Fisheries
DEFF	Department of Environmental Affairs, Forestry and Fisheries
DICLAD	Dialogues for climate change literacy and adaptation
DHSWS	Department of Human Settlements, Water and Sanitation
GIS	Geographical Information Systems
HAT	High Altitude Teams
IDP	Integrated Development Plan
INWaRDS	Integrated Water Resources Decision Support
IWRM	Integrated Water Resources Management
KNP	Kruger National Park
KRA	Key Result Area
LEDET	Local Economic Development, Environment and Tourism (Limpopo Province)
LMC	Legalameetse Management Committee
LORHeF	Lower Olifants River Health Forum
LORiN	Lower Olifants River Network
MERL	Monitoring, Evaluation, Reporting and Learning
MORiN	Middle Olifants River Network
MSI	Municipal Support Initiative
MTPA	Mpumalanga Tourism and Parks Authority
NGO	Non Governmental Organisation
NRM	Natural Resources Management
NRMPs	Natural Resource Management Programs
OCMA	Olifants Catchment Management Agency
RESILIM-O	Resiliency of the Limpopo River Basin
SANParks	South African National Parks
USG	United States Government

Director's Note

Executive Summary

This annual report covers the seventh year of the RESILIM-O Program from October 2018 to September 2019. It is also the last full year of project-based activities before the programme starts close-out between Oct 2019 and March 2020.

This year has again seen significant progress in the implementation of some 25 projects related to water and natural resources management and climate change adaptation in the Olifants River Basin. Continued work on deepening the **institutionalisation of our systemic, social learning approach** has been notable as an important way to ensure the sustainability and succession of our efforts through RESILIM-Olifants. We see embedding this approach with partners – or 'institutionalisation' - as an important way to build adaptive capacity and resilience in the face of change and uncertainty. Staff have worked incredibly hard to continue to institutionalise these approaches within water resources protection and management, spatial planning, restoration in the greater Blyde area and mangroves of the Limpopo River, co-management of Legalameetse, climate change adaptation and for small-scale farmers in the lower and middle Olifants. The work has been strengthened through collaboration with many partners enabled through our sub-grants to the K2C, Ukuvuna Harvests, Mahlathini Development Foundation, Rhodes University, CDS-ZC in Mozambique, K2C, EMROSS, Aves Africa and Creating Sustainable Value. This theme of **institutionalisation and sharing experiences** is highlighted through the work below. We have focused on sharing experiences through media, conferences and our successful Shared Learning events which have highlighted experiences in water resources protection and management, water conservation & demand management, spatial planning, co-management, climate change adaptation and on succession planning and the significance of our work.

Again all of this work is being done within a wider national and international context of water insecurity and scarcity and growing concern over climate change trajectories, and outrage at the lack of action by the 'global community'. The protracted drought in this area showed no signs of abatement and flows in the lower Olifants decreased to – and remain at - critically low levels, flouting our own national policies. While climatic drivers provided a window into potential future vulnerabilities, the deep structural drivers that continue to contribute to water insecurity remained deeply concerning for AWARD. In comparison to last year, flows are nearly FOUR times lower. Again the Olifants is in danger of drying up and with the increasing summer temperatures and poor rainfall projected, is likely to do so without the concerted effort of the network established through RESILIM-O.

On a cautiously positive note, we have a new minister of Human Settlements, Water and Sanitation (DHSWS), Min. Sisulu, and the hope is that she will turn around the dire state of the Department and in particular, the urgently needed institutional arrangements which have been severely weakened over the last decade. Indeed, political and institutional flux was a hallmark following the elections in May this year, with the major reorganisation of national government departments[1]. Although this is both negative and positive, the will to address many of the negative governance issues from the last 5 to 10 years appears to be a focus for reform. Although the positive political reforms will really only be felt after the close of RESILIM-O, some positive impacts are already evident. For example, the Olifants Catchment Management Agency (OCMA) appears to be back on track and we have seen some unlawful activities being penalised by

[1] The changes include transfer of forestry and fisheries from the previous Department of Agriculture, Forestry and Fisheries (DAFF) into the Department of Environmental Affairs, to form the Department of Environment, Forestry and Fisheries (DEFF); amalgamation of the Department of Water and Sanitation (DWS) with the Department of Human Settlements, to form the Department of Human Settlements, Water & Sanitation (DHSWS); and the inclusion of agriculture into the Department of Rural Development and Land Reform (DRDLR) to form the Department of Agriculture and Land Reform (DALR).

the Limpopo Provincial conservation agency (LEDET). On the other hand, suggestions that there will be a major legislative review within the new Department of Human Settlements, Water and Sanitation (under which DWS now falls) to align legislation related to water with that related to human settlements, is concerning in that this may divert attention away from the operational aspects of water resource management within the catchment.

Reflecting on last years' annual report, I am able to repeat the same statement that "In January, using our INWARDs model, AWARD together with the Kruger National Park secured releases from De Hoop dam which prevented the river from drying up". Drought alone cannot be blamed for this situation. Rather the deep structural issues beyond our control, and in particular those of governance, have yet to be addressed. This has to be led by the DHSWS as part of proactive planning for 'times of stress' which are likely to increase under climate change. In addition to our own work on climate change projections which highlight temperature increases as a certainty, recent work by Prof Schulze points to a 40 – 60% decrease in river flows in the Olifants Catchment. This is significant.

Nonetheless local governance networks are essential for a vibrant democracy and for water security. In order to support planning and action and **build resilience in IWRM**, we have now established three networks: two covering the lower and middle Olifants respectively and a third to bring the protected areas on board in terms of river monitoring. The expansion of water governance work to Middle Olifants has been designed to address some of the key proposed developments which will impact and downstream into Mozambique. This has been accompanied by stakeholder workshops in the lower and middle Olifants to respond to water insecurity and to prepare for a collaborative engagement between stakeholders from both areas on water issues of mutual interest (Oct 2019). We can confidently note the value of our support in the continued use and institutionalisation of our tools and processes for water resources protection by SANParks, National DHSWS and others. We have also successfully raised new funds through JRS to augment InWaRDS through a bioinformatics system for aquatic biodiversity in all Lowveld rivers. Ensuring flows in the lower Olifants is of international significance since the Olifants is now the largest contributor of flow to the once-perennial Limpopo River. In this regard we have supported further restoration of the Limpopo estuary through mangrove replanting through a grant to CDS.

Injustices in access to water persist in the Olifants and in this regard we have supported a model for the Mopani DM Water and Sanitation Committee which will be piloted in all five local municipalities to support rapid escalation of community issues to the appropriate level. This resonates with the Water Committees that were so important during the 1994 transition.

Until recently the mandate for conservation and biodiversity **land-use planning** remained the domain of conservation authorities and provincial environmental departments. Care for biodiversity was primarily through protected area proclamation. However, with the gazetting of Biodiversity Bioregional and Sector Plans initiated by SANBI, there is a precedent-setting shift to include local government as key players as well as a broad spectrum of stakeholders. AWARD has now provided tools with which to develop and sustain these roles in terms of embedding **biodiversity** into spatial planning. Integrating biodiversity into spatial planning in the lower Olifant region has been successfully achieved through a number of means including raising awareness about the Critical Biodiversity Area (CBA), maps and land-use guidelines among spatial planners and other stakeholders involved in biodiversity-based activities and the development of resources and tools including CBA resource packs and the "Biodiversity Guru" mobile app. Most significantly we have focused on strengthening the sustainability of our efforts past RESILIM-O and in this case, institutionalisation is clearly evident through input into the recent Spatial Development Frameworks (SDFs) for Mopani DM and Ba-Phalaborwa LM as well as the Greater Kruger region. Including the youth in an understanding of biodiveristy and spatial planning has also been a priority through the Moletele Youth Project.

In terms of our work on **invasive alien plant control and restoration of the biodiverse, strategic water source area of the Blyde Catchment**, this year's highlight has been the institutionalisation of collaborative planning which is now firmly entrenched as an approach to short and medium-term planning and action. Two rounds of clearing in inaccessible areas of the Blyde by the HAT and Restoration Custodianship teams resulted in some 800 ha cleared. Fortuitously our efforts to raise funding to continue the work have been successful through funding secured from DEFF under the Land User Incentive scheme (Oct 2019). We have also seen the establishment of the Sand Catchment Restoration Partnership, bringing together CPAs from the upper Blyde, Sand and Klaserie catchments with downstream landowners – the Sabi-Sand Wildtuin - to support ecosystem restoration. Furthermore, the K2C Restoration Custodianship team has demonstrated a new model for IAP control in remote areas through capacity development of local youth in custodianship of the areas in which they live. Finally the discovery of rare and biologically significant peat wetlands in the upper Blyde catchment, has led to a better understanding of these systems and means for protecting them.

As we have noted in the past, land reform and co-management in South Africa- particularly in protected areas – continues to be a difficult journey. Support for the **co-management of the high biodiversity Legalameetse Nature Reserve**, also a Strategic Water Source Area has continued. Unfortunately in October 2019, LEDET announced that it would not work with the land-owners (Legalameetse Management Committee) until they signed a co-management agreement. This led to an impasse given that the LMC was unhappy with certain elements of the draft agreement and AWARD thus focused efforts on capacity development of the LMC. This involved learning and sharing of experiences with other land-claim communities such as the Makuleke and the Khomani-San amongst others, their Involvement in the development of a revised Park Management Plan and the development of guidelines that would steer any future developments and benefit-sharing in LNR. As part of this the committee planned the LNR Cultural Day (held finally in October 2019). A number of environmental monitors from the area have been seconded from the K2C and have continued to learn from the process and now form the youth group of the LMC. In terms of sustainability, and following last year's stalemate, the long overdue Interim Co-management Committee with LEDET, was established in August. Moreover, we have also secured agreement with the Legal Resources Centre to support the LMC with the long-standing lack of resolution of four settlement claims as part of succession planning.

Capacity development for climate change adaptation and literacy has formed a cornerstone of the project. We have not only continued work with stakeholders on dialogues for climate change adaptation and literacy (DICLAD) but also focused efforts on sharing lessons with the national network of organisations involved in climate change work. With a specific focus on food and water security, we continued work with small-scale farmers in Sekukhuneland through Ukuvuna and the lower Olifants through Mahlathini Development Foundation. It is important to provide farmers with a platform to share and learn, and a number of successful farmer-learning exchanges or open days were held to strengthen the agroecology network. This also provided them with a collaborative voice in contesting the 'Seed Bilsl' which deny farmers the right to store (indigenous) seed. Markets have always posed significant challenges to sustainability of agro-ecology initiatives and we have made progress with marketing of organic herbs and vegetables by the Lower Olifants farmers, and adoption of the Participatory Guarantee Systems (PGS) certification scheme.

All of the above work has always had capacity development for resilience-building as a strong theme. This year has also seen the completion of the *Institutions of Higher Learning project* which succeeded in establishing the Limpopo Basin Curriculum Innovation Network (LBCIN) for universities and other higher learning bodies in South Africa and Mozambique to share ideas and research outputs on climate change

resilience in the catchment. This network provides a framework for continued collaboration and development of future generations of researchers and managers in the catchment.

Finally in our commitment to share experiences, AWARD has hosted 12 sharing learning events in this year covering the full range of project themes. These have been supported by the development of communications products, an updated website - which we invite readers to visit (www.award.org.za) - and presentations at 13 conferences, which have all provided the opportunity to showcase RESILIM-O.

In conclusion then, it has been an extremely busy and productive year as we move to program close-out. Most of the projects have focused on planning for the sustainability of our work through networks and institutionalisation and most grants have been concluded or are in the process of tying up. We look forward to next year as an opportunity to reflect and plan. I would like to take this opportunity to wish all a fruitful end of 2019 and 2020.

Dr Sharon Pollard

Executive Director, AWARD

1 Overview

This annual report covers the period October 2018 to September 2019[2] and is the seventh report submitted to USAID. This period is the fourth and final year of Phase 2, in which we have taken the outputs of Phase 1 into action through testing, reflexive learning and institutionalisation. This period is also the second year of the no-cost extension granted in August 2017.

The report starts with a description of current conditions and threats in the Olifants River Catchment and an overview of the RESILIM-O program. It reports progress for the year against indicators and then as a narrative against each Key Result Area (KRA). Section 3 provides a financial report.

1.1 Introduction

The RESILIM-Olifants program focuses specifically on the transboundary Olifants River Catchment which forms part of the even-wider Limpopo River Basin. The Olifants River Catchment, or ORC, is of particular concern because of the wide-scale threats to biodiversity and the ecosystem services that support people's livelihoods. Much of our work in Phase I focused on a basin-wide assessment which is summarised below as background to the project-specific work detailed in Section 2.

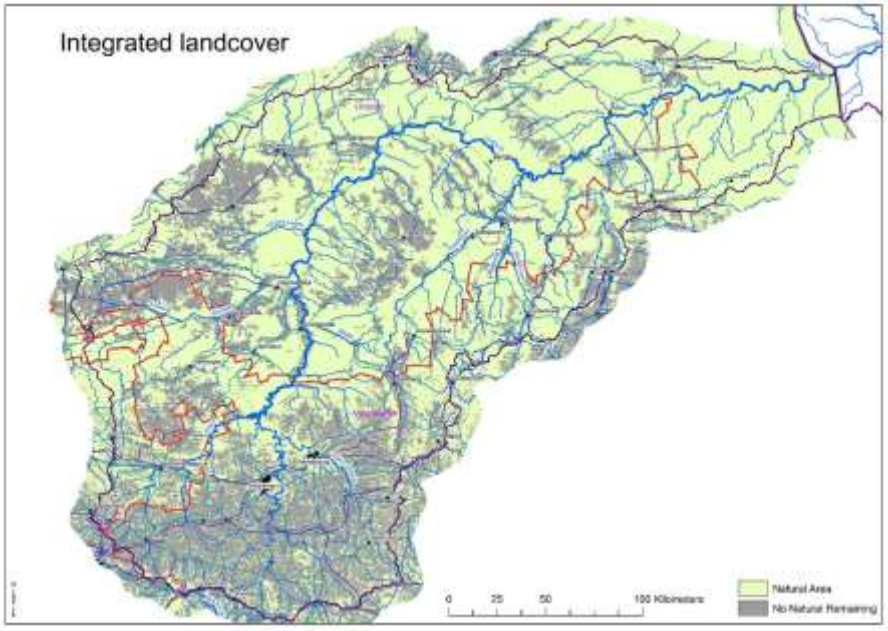


Figure 1: Map of the South African portion of the Olifants River Catchment indicating land transformation and areas with little to no natural cover remaining

From both an aquatic and terrestrial perspective, the Olifants River Catchment (ORC) is a rich and diverse landscape. It is home to areas of endemism and high biodiversity, particularly along the Drakensberg Escarpment which includes the Blyde and Legalameetse Nature Reserves and some tributaries of the Olifants. The Olifants River flows into the Limpopo River and the Maputoland-Tongoland Ecoregion, an area of rich biodiversity and endemism which includes the Limpopo River estuary. Currently, the Olifants River is the only tributary that sustains flows of the Limpopo River in the dry season. Through RESILIM-O, AWARD has identified a wide range of habitat types in the grassland and savanna biomes, although climate

[2] Please note that the AWARD work plan runs from January 2019 to December 2019 while the USAID financial year is from October 2018 to September 2019.

change is likely to see a major transformation of the already threatened grasslands to savannas. There are substantial areas of natural landcover especially in the Lowveld, along the escarpment and Blyde River Catchments. Nonetheless many of these are threatened by a range of drivers including mining, urbanization, afforestation and invasive alien plants. Declining water quality and decreased flows threaten aquatic systems along the entire Olifants River within South Africa and to the Xai estuary in Mozambique.

Large areas of the catchment have been substantially modified and the upper catchment is almost totally transformed through agriculture and mining with the latter increasing significantly in the last decade even across former agricultural areas (Figure 1). A number of ecosystems are considered either critically endangered or endangered and many more are vulnerable. In Mozambique, the estuarine area is classified as a *National Maritime Ecosystem Priority* area. Equally, the mainstem of the Olifants River is regarded as critically endangered from its source to the protected areas in the Lowveld (Figure 2). Similarly, almost all westerly-flowing rivers in the high and middle-veld are critically endangered. Intact river systems are limited to the Blyde and some tributaries of the Steelpoort and the lower Olifants. With over 600 former or existing mines (coal and platinum in particular), impacts are felt in both the terrestrial and aquatic systems and on human livelihoods. The discharge effluent from many of the 100 plus waste-water treatment works (public and private), many of which are struggling to meet national standards, impacts on the aquatic systems downstream and again on people's livelihoods. Indeed AWARD's work suggests that the most vulnerable livelihoods in terms of the direct dependencies on ecosystem services are in the former homelands which cover about half of the ORC.

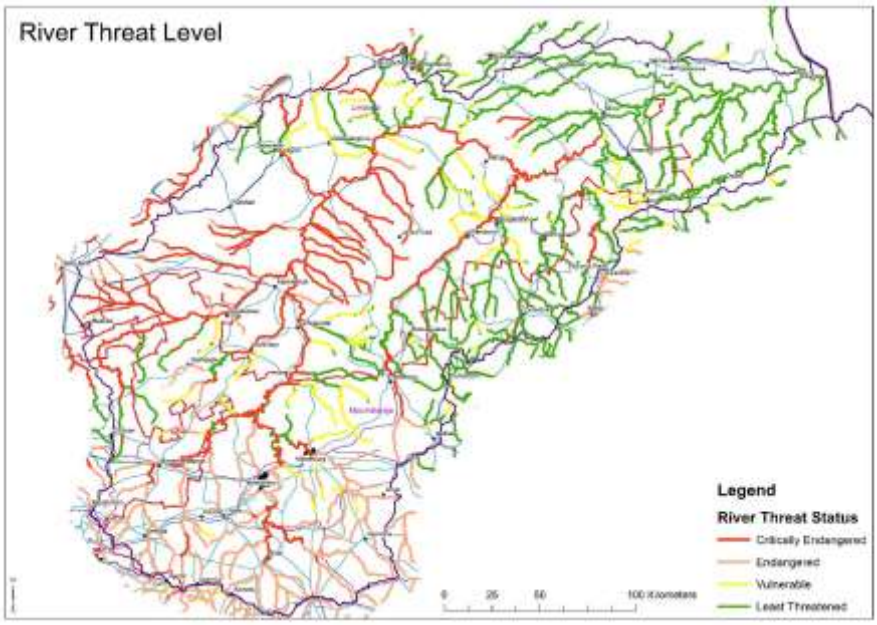


Figure 2: Map of the threat level to rivers of the Olifants River Catchment within South Africa

AWARD has identified a number of integrated biodiversity areas which track the mainstem Olifants River (after Loskop Dam) and include the Steelpoort and Blyde Catchment and the swathe of land across the escarpment into the Lowveld (Figure 3). Key elements contributing to the selection of these areas include exceptionally high values of diversity at multiple levels of biodiversity, high levels of endemism, the presence of threatened ecosystems, larger contiguous areas of intact habitats, and under-protected habitat types.

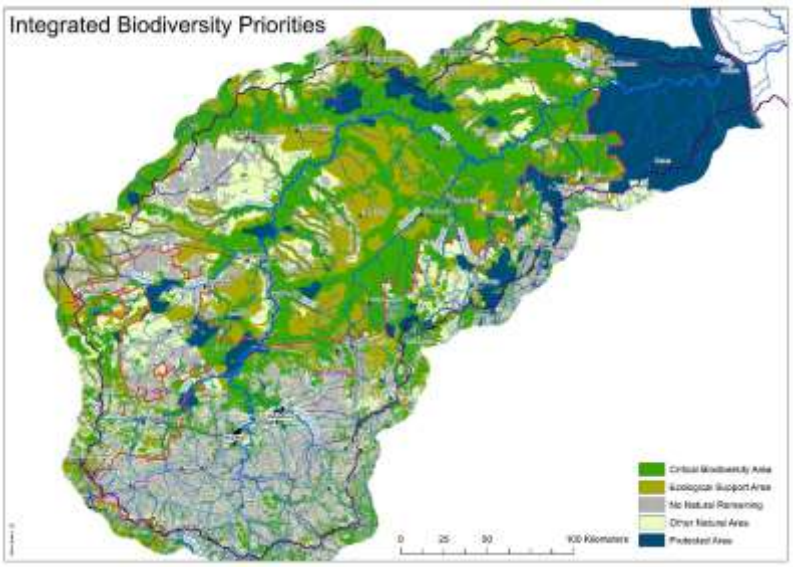


Figure 3: Map of the Integrated Biodiversity Priorities

Within the domain of water resources, the Olifants River ceased flowing for a number of days in 2005, prompting widespread concern and calls for an integrated focus on all the easterly-flowing rivers of the Lowveld of South Africa. As noted, the Olifants Catchment is a particular concern given that it is the largest contributor of flows to the transboundary Limpopo River. Despite the enabling legislative framework for water reform in South Africa introduced in 1998, most rivers in this catchment continue to degrade in both quality and quantity. Given that these rivers form part of international systems, the implications are of wider significance than for South Africa alone. Indeed flows into Mozambique support the livelihoods of between 6,000 and 10,000 small-scale farmers and the critical conservation priority mangroves (Figure 4). All these are vulnerable to changes in flow and water quality, highlighting the importance of the systemic approach adopted by AWARD.

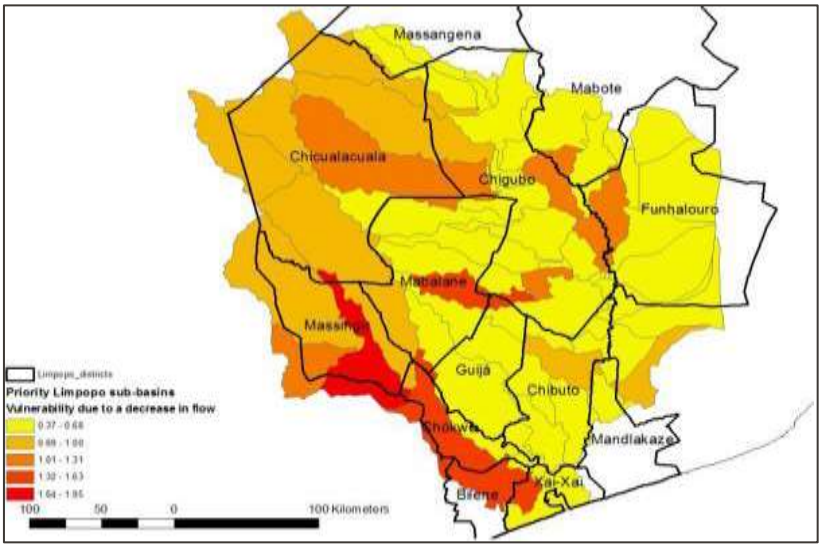


Figure 4: Map illustrating areas with the highest social vulnerability to reductions in flow in the lower reaches of the Limpopo basin (source: Verde-Azul)

1.2 The RESILIM-O Program

The RESILIM-Olifants or RESILIM-O program, funded through USAID, focuses on the Olifants River Basin, the health of its ecosystems and the dependence of residents on these, and how people may adapt to climate change and other change factors through increased resilience.

Although RESILIM-O focuses on the Olifants Catchment, it is located within the broader context of the Limpopo Basin. Here another RESILIM program has addressed similar issues at the scale of the four SADC member states that share the Limpopo Basin (South Africa, Botswana, Zimbabwe and Mozambique). It is worth noting here that the Olifants River contributes nearly 40% of the water that flows in the Limpopo River making it an important catchment in the system as a whole.

The overarching goal of RESILIM-O remains as outlined in the original project documentation: "To reduce vulnerability to climate change through building improved transboundary water and biodiversity governance and management of the Olifants Basin through the adoption of science-based strategies that enhance the resilience of its people and ecosystems through systemic and social learning approaches".

Phase 2 entails implementation of resilience-building endeavours in response to the collaborative exploration of context in Phase 1. Seven Key Result Areas (KRAs) and their higher-order strategic objectives were adopted (see Figure 5 and Figure 6). These KRAs address the key strategic areas for action (KRA 1-5) as well as internal governance, monitoring, reporting and learning (KRA 6 and 7). While some of the activities have been clustered according to specific objectives, some are cross-cutting and co-dependent so that all contribute in varying degrees to the objectives and to the RESILIM-O goal.

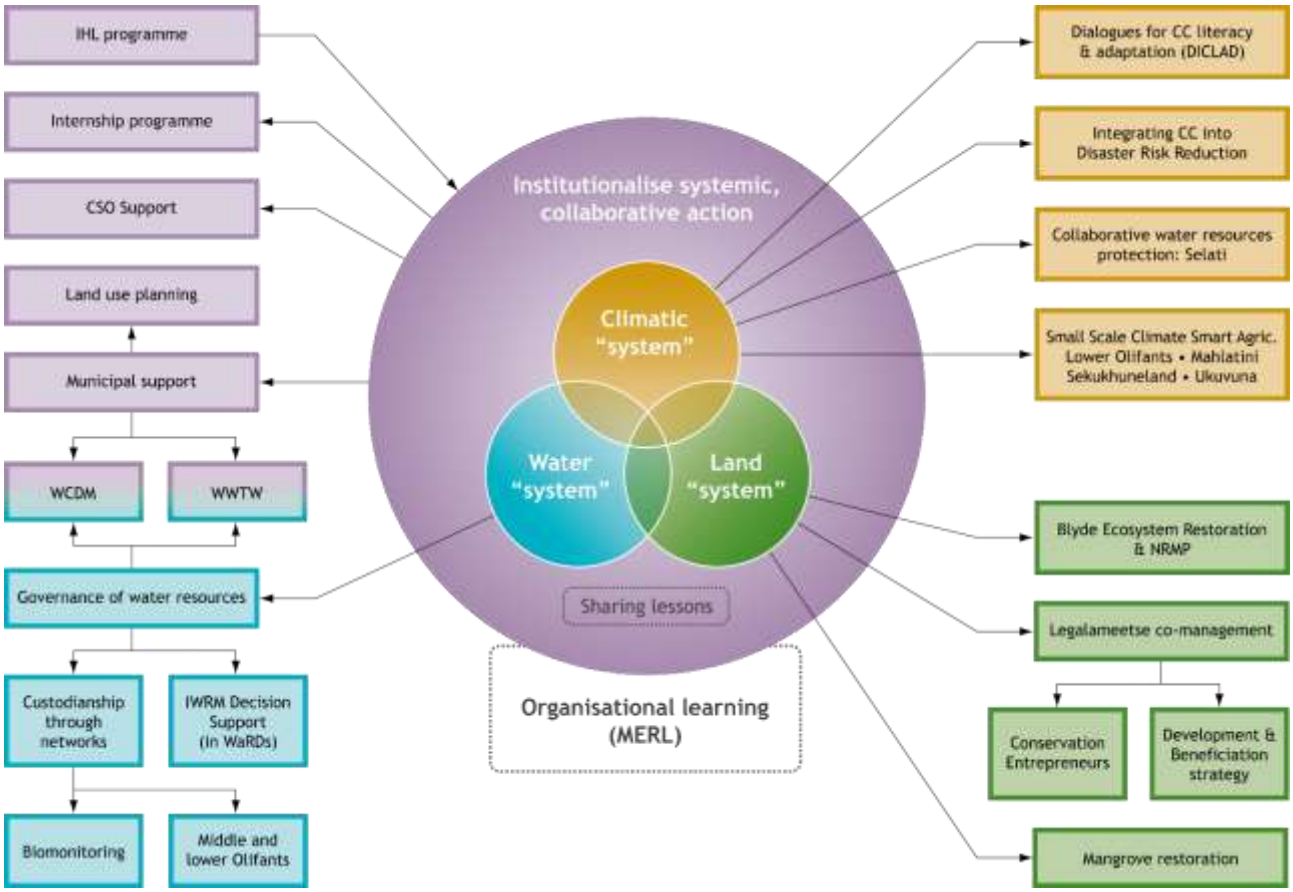


Figure 5: Schematic of RESILIM-O framework and activities in Phase 2

The catchment is viewed as a complex coupled social-ecological system. In such systems, social learning is not simply a precursor to action; learning needs to be ongoing. Thus a re-formulation of issues and solutions can also take place to facilitate more strategic action. The relevant issues relate to climate change, biodiversity and water (natural resources), and relevant actions would be those that make the people of the catchment and the ecosystems more resilient to climate change. Systemic social learning enables stakeholders in government and civil society to plan collaboratively for action, to take action, and to learn from reflection on their actions (reflective learning and strategic adaptive management). RESILIM-O has continued to embrace the systemic, social learning approach into Phase 2. Based on Phase 1 experiences, we have developed an innovative and responsive approach to collaborative planning for action that effectively combines evidence-based information with issues identified by stakeholders.

Fundamental to building resilience is the development of capacity within the region and its institutions to carry the process of adaptive management and social learning forward. Phase 2 therefore focuses on capacity development, innovation, testing, embedding and institutionalizing resilience-based practices in various institutions. Although the project cannot hope to reverse all the processes that have been in place for a number of decades, it can make a considerable contribution by providing new ways of addressing management challenges, new strategic direction for responding to climate change, and by supporting development options that are built on sustainable resource management.

Currently the RESILIM-O program comprises some 19 projects which address our core focus areas of climate, water and land “systems”. A summary is given in Figure 5.

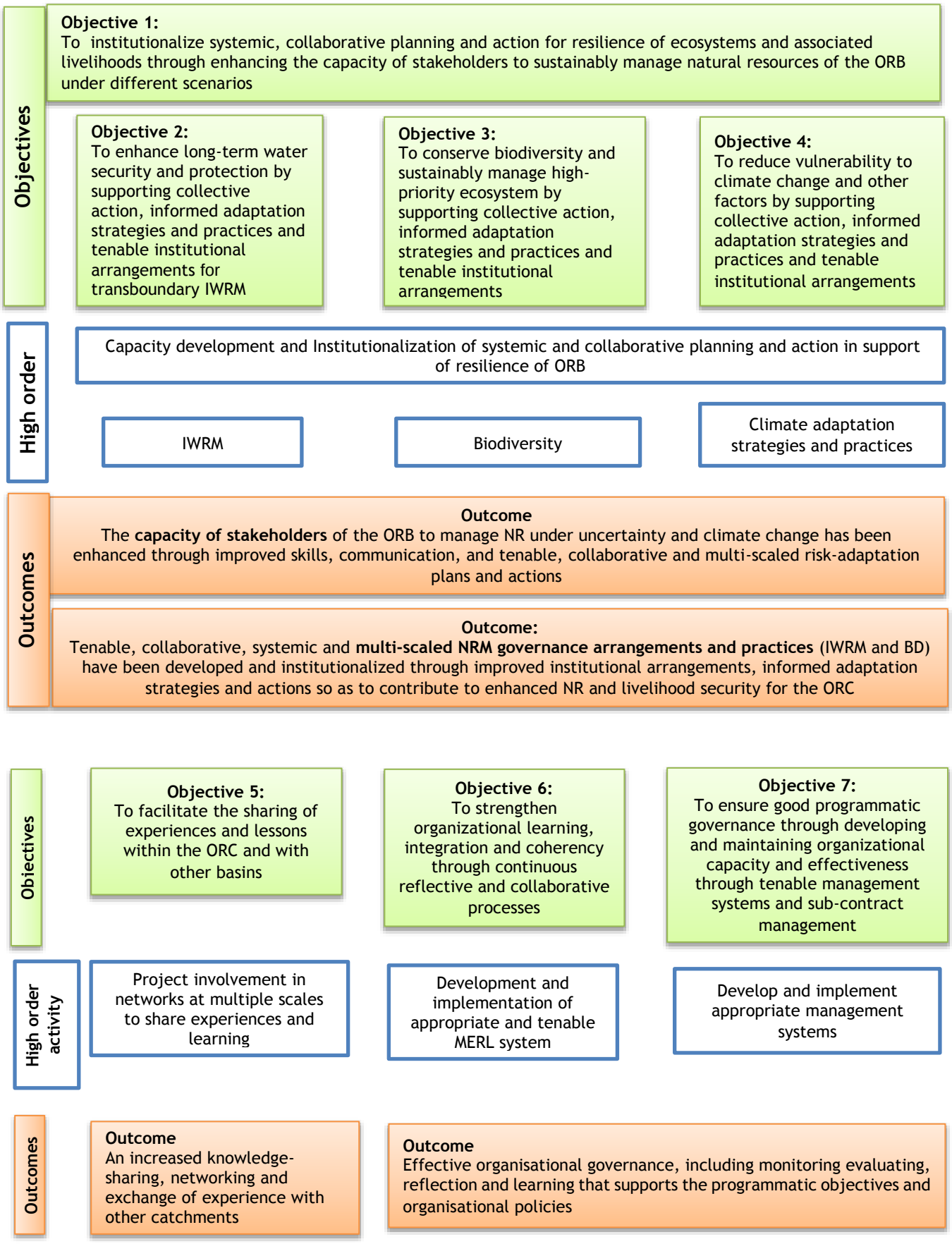


Figure 6: Schematic of RESILIM-O Phase 2 objectives, higher order activities and related outcomes. ORC = Olifants River Catchment, IWRM = Integrated Water Resources Management, BD = biodiversity, MERL = Monitoring, Evaluation, Reporting and Learning

1.3 Results in numbers

The Monitoring, Evaluation, Reporting and Learning (MERL) component of RESILIM-O aims to promote learning and accountability using a hybrid framework that includes monitoring and evaluation against intended outputs and outcomes (as quantitative indicators), but which also leaves space for more qualitative monitoring and evaluation through process documentation, case studies and qualitative indicators. This hybrid approach recognises that development work takes place in complex, open social-ecological systems, where inherent uncertainties make it difficult to track progress simply according to pre-determined targets. Progress in RESILIM-O is therefore assessed through both the quantitative data presented in this section and the narrative descriptions in Section 2.

The biological condition of over 20,00 ha of biologically significant areas was improved and over 548,000 ha of land experienced better natural resource management as a result of RESILIM-O. Over 1,100 people (67% women) increased their capacity to adapt to the impacts of climate change.

Program Area: NRM and Biodiversity

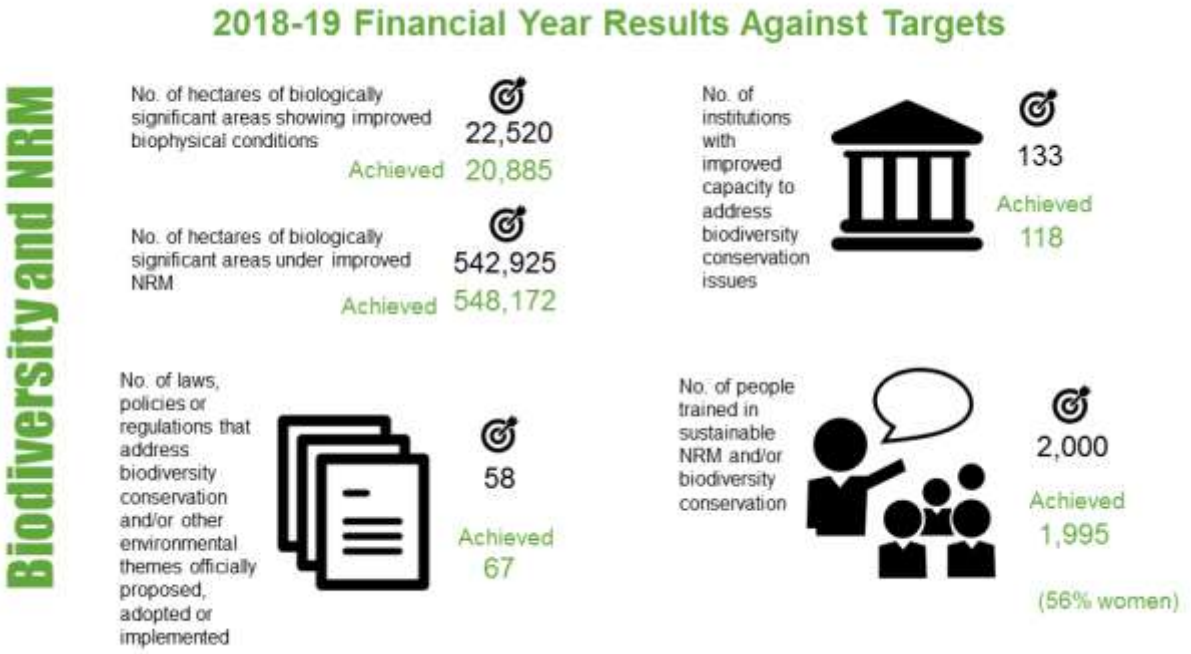
This year RESILIM-O activities contributed to improved biophysical conditions in 20,885 ha of biologically significant areas. This consisted of 7,270 ha of high-biodiversity land cleared of invasive alien vegetation in the Blyde sub-catchment (see Section 2.3) and 13,600 ha of river and riparian zone along the Blyde, Steelpoort and Olifants Rivers which benefitted from two flow releases from the Blyde and De Hoop dams during the year (see Section 2.2). Alien vegetation clearing was mainly in grassland areas and the species cleared included pines, gums and wattles, which are all high-priority invasive species of grasslands in South Africa (CSIR national prioritisation, Le Maitre *et al*. 2012).

A total of 548,172 ha of biologically significant areas experienced improved management this year. This was made up of 395,332 ha of biologically significant areas within Maruleng and Ba-Phalaborwa municipalities with improved protection due to the institutionalisation of the Critical Biodiversity Area (CBA) maps and other resources developed through RESILIM-O. Management was further improved in the 91,800 ha of highly significant biodiversity area in the Blyde catchment this year, through further improvements in coordination of alien vegetation clearing operations, addition of extra clearing teams, clearing of previously inaccessible areas and improved governance arrangements (see KRA 3). River and riparian areas under better management included the 13,600 ha of river in the Lower Olifants reported above and 3,850 ha of riparian zone within private nature reserves (see KRA 2). In addition, 38,590 ha of land surrounding the Limpopo estuary in Mozambique was formally delimited for community natural resource management through NRM committees – an arrangement that promotes custodianship and enables better NRM.

This year 1,995 people received training in sustainable natural resource management (NRM) and/or biodiversity conservation, 56% of whom were women.

Project activities increased the capacity of 118 institutions (organisations) to address NRM and biodiversity conservation issues. This mostly involved additional capacity development with institutions we have worked with in previous years, rather than new contacts. Institutions were only counted under this indicator if significant additional capacity-building occurred this year through training, mentoring or development of enabling tools and processes (as described in Section 2). The small shortfall of the target (133) was due to difficulties with getting the intended level of engagement with government departments in the water governance and co-management projects.

A total of 67 laws, policies or regulations were recorded as proposed, adopted or implemented.



Program Area: Climate Change

This year 1,166 people (67% women) increased their capacity to adapt to the impacts of climate change through the RESILIM-O program, around 100 more people than last year. This capacity development includes training, mentoring and ongoing support through our collaborative social learning approach.

A total of 1,720 people received training in climate change adaptation, 61% of whom were women. The numbers fell slightly short of the target of 2,000 people (a variance of 16%).

The capacity of 143 institutions to assess or address climate change risks was improved. The variance of 14% was due to the same reasons described above under NRM and Biodiversity. Further details are provided in Section 2.

The number of laws, policies, regulations or standards proposed, adopted or implemented exceeded the target and the results were again higher than last year. This year 45 laws, policies, regulations or standards addressing climate change adaptation were proposed, adopted and/or implemented.

Cross-cutting Indicators

The number of people reached through the Our Olifants media campaign was calculated from social media reach statistics as well as readership, listenership or viewership figures published by the various print media, radio and television stations which have featured stories on RESILIM-O. The target for media exposure this year was set conservatively, at around 1 million people, given that AWARD had no dedicated media and communications team. Nevertheless, we managed to reach over million people.

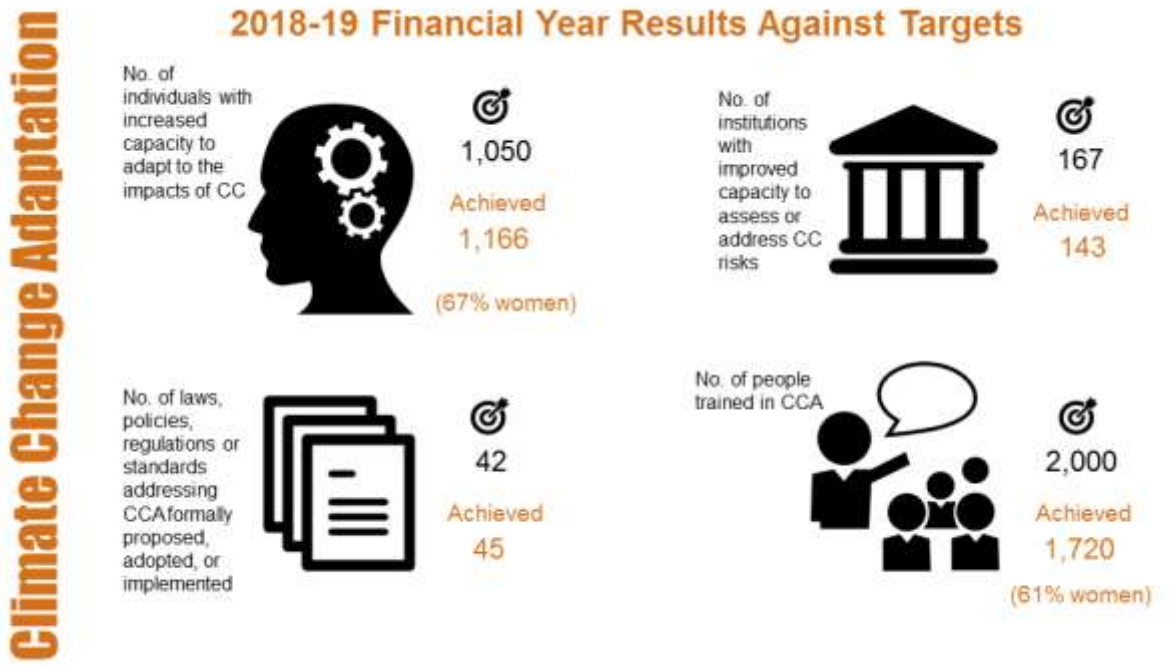
Two peer-reviewed papers were published during this reporting period, as detailed below:

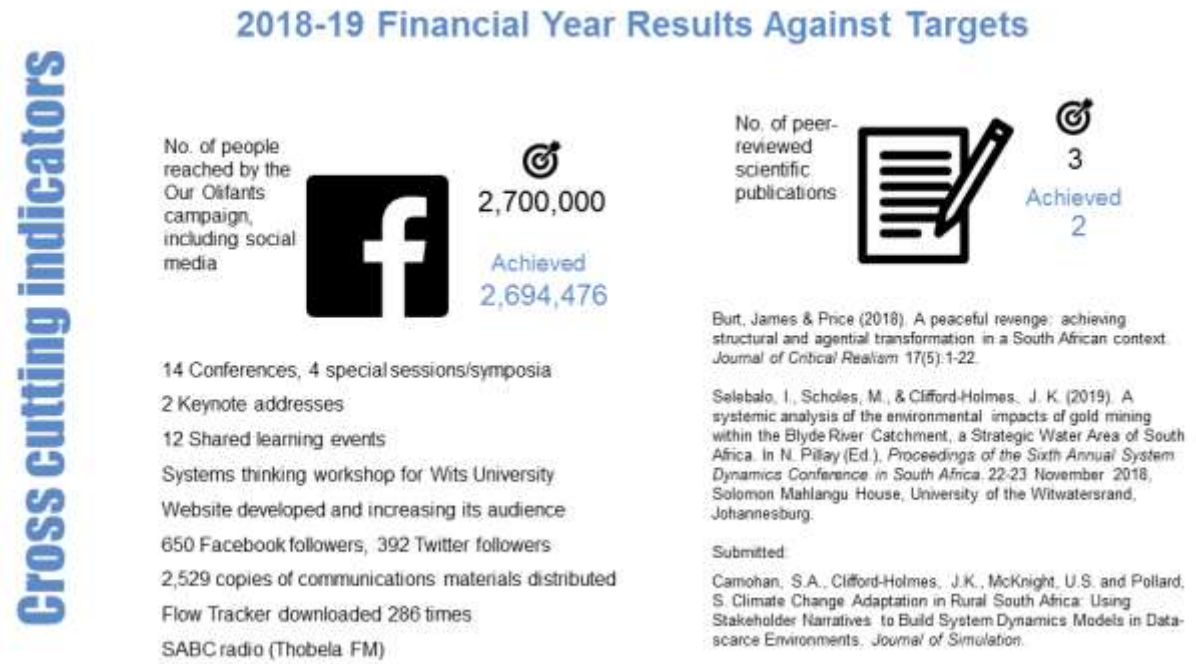
- Burt, James & Price (2018). A peaceful revenge: achieving structural and agential transformation in a South African context. *Journal of Critical Realism* 17(5):1-22.
- Selebalo, I., Scholes, M., & Clifford-Holmes, J. K. (2019). A systemic analysis of the environmental impacts of gold mining within the Blyde River Catchment, a Strategic Water Area of South Africa.

In N. Pillay (Ed.), *Proceedings of the Sixth Annual System Dynamics Conference in South Africa*. 22-23 November 2018, Solomon Mahlangu House, University of the Witwatersrand, Johannesburg.

The following paper was submitted:

- Carnohan, S.A., Clifford-Holmes, J.K., McKnight, U.S. and Pollard, S. Climate Change Adaptation in Rural South Africa: Using Stakeholder Narratives to Build System Dynamics Models in Data-scarce Environments. *Journal of Simulation*.





2 Results per Key Result Area

2.1 KRA 1: Enhancing resilience through systems approaches and capacity development

Key Area 1 objective: To institutionalise systemic, collaborative planning and action for resilience of ecosystems and associated livelihoods through enhancing the capacity of stakeholders to sustainably manage natural resources of the Olifants River Basin under different scenarios.

AWARD's Resilience Support Initiatives were designed to give meaning to our systemic, social learning approach to capacity development. The **Municipal Support Initiative** (MSI) focuses on improving preparedness and responsivity of two local municipalities (Maruleng and Ba-Phalaborwa) and one district municipality (Mopani) to deal with natural resource protection, degradation and climate change vulnerability. As a professional learning process it supports practitioners through workplace support, tool development and application. An important innovation is the use of our "wagon wheel" framework which connects the technical and political spheres of local government through continuous feedback and engagement and encourages a systems view of practices rather than a linear, hierarchical view. The MSI model has proven robust for institutionalisation of social learning and improved practices even in the very fluid and contested municipal space. The main areas of support this year were:

a) Participation in the Maruleng Local Muncipality's Integrated Development Plan (IDP) process
b) Support for land-use planning which integrates biodiversity and climate change
c) Supporting the uptake and implementation of the work done last year under the two MSI sub-grants on Water Conservation and Demand Management and Wastewater Treatment Works (WWTW).

We supported better **wastewater management** in Ba-Phalaborwa LM through building partnerships to improve the regularity of water testing, and through pushing for institutionalisation of the WWTW project findings by handing over the turnaround plans, resources and decision support tools to the district municipality under which Ba-Phalaborwa falls (Mopani DM), and also to the Integrated Water Governance System (IWaGSS) project which is also working with these municipalities.

We also worked with Mopani DM and the DHSWS Water and Sanitation Committee to develop a model which will be piloted in all five LMs, which allows for rapid escalation of community reports to the appropriate level (a national first).

Figure 7: Two participants in the Moletele Youth Program work on their mapping skills

Until recently the mandate for conservation and biodiversity **land-use planning** remained the domain of conservation authorities and provincial environmental departments. Care for biodiversity was primarily through protected area proclamation. However, with the gazetting of Biodiversity Bioregional and Sector Plans initiated by SANBI, there is a precedent-setting shift to include local government as key players through their spatial planning directorates. This means that land-use planners will have a central role to play in the oversight and custodianship of biodiversity. Essentially this is set to be a "game-changer" in that spatial planners will be able to approve or decline land-use applications that affect or impact on biodiversity within a specific municipal boundary. A broad spectrum of stakeholders stands to benefit from establishing biodiversity-based economic activities.

The MSI land-use planning project provided tools for spatial planners and other roleplayers to facilitate better management of biodiversity at local level. These include the Biodiversity Guru mobile app (supported and endorsed by LEDET) and a comprehensive Critical Biodiversity Areas (CBA) resource pack[3] which has now been distributed to 84 people. Other highlights of the year included:

- A shared learning event on land-use planning in November 2018 raised awareness about the Critical Biodiversity Area (CBA) maps and land-use guidelines among various stakeholders involved in biodiversity-based activities[4]. Another event in August, in partnership with the LEDET Biodiversity Planning Directorate, supported the implementation of the CBA map and Bioregional Plans in all District and Local Municipalities in Limpopo Province. With the formal, legislated introduction of the bioregional plans comes the need to provide adequate professional support for institutionalisation. AWARD is ideally placed to lead with lessons from our RESILIM-O work on integrating biodiversity into spatial planning.
- AWARD has been invited to be on the Biodiversity Coordination Committee (BCC) for the province.
- Input into the Spatial Development Frameworks (SDFs) for the Mopani District and Ba-Phalaborwa Local Municipalities, as well as

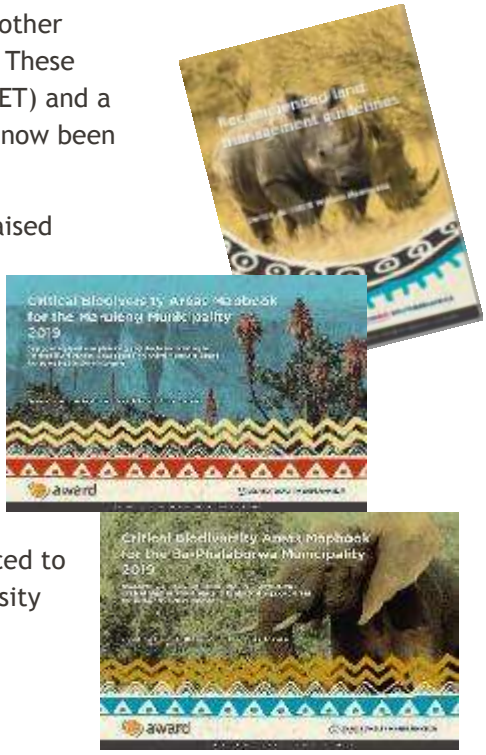


Figure 8: Publications in the land use planning CBA resource pack

[3] Includes: Planning and Caring for Biodiversity: A Beginner's Guide, Critical Biodiversity Area (CBA) overview brochure, series of 6 introductory brochures on various topics, A3 CBA Mapbooks for Maruleng and Ba-Phalaborwa and Biodiversity Handbooks (Sector Plans) for Maruleng and Ba-Phalaborwa.

[4] Including estate agents, wildlife estate managers, private reserve managers and farmers

the SDF being developed for the Greater Kruger region, which aims to better align Kruger's land use planning processes with municipal planning processes. AWARD also contributed to the Greater Kruger Water Sector Working Group (an advisory committee for the Greater Kruger SDF process), and sat on the Intergovernmental Steering Committee for the Ba-Phalaborwa SDF.

As relatively new owners of some 77,000 ha of high biodiversity land, the Moletele CPA is an important custodian of natural resources and biodiversity in the lower Olifants. Phase 2 of the **Moletele Youth Project,** an eco-literacy and capacity development program for eight young people from the CPA, continued this year. Sessions included developing a vision for their land, visiting farming enterprises on their land to learn more about what a farming business entails, and spatial literacy.

Since many of the effects of climate change and natural resource depletion are experienced directly by civil society, the **Civil Society Organisation Support Initiative (CSO-SI)** aims to support the sector by mobilising civil society, supporting diversity and providing opportunities for exploring self-organisation and collective action. Activities this year included:

Figure 9: Derick du Toit addressing participants at the CSO shared learning event in November 2018.

- Continued extensive use of the Olifants CSOs and Changing Practice WhatsApp groups to report back on meetings, share information, opportunities and resources, and coordinate activities. AWARD staff continue to participate in these WhatsApp groups.
- An Environmental Rights and Action workshop for Civil Society Organisations from the upper and middle Olifants was held in November 2018, together with the Legal Resources Centre.
- Participants of the Changing Practice course (completed last year) continued to work on the "change projects". One participant acknowledged the value of the course for his work on the WhatsApp group.

The **capacity building for institutions of higher learning** project (a sub-grant implemented by Rhodes University) engaged six institutions of higher learning (IHLs) operating in the Limpopo Basin[5] - four in South Africa and two in Mozambique - with the aim of strengthening systemic and social learning approaches to climate change adaptation in the catchment. Achievements included:

- Establishment of the Limpopo Basin Curriculum Innovation Network (LBCIN) for collaborative learning and sharing ideas and research outputs on climate change resilience in the catchment.
- Innovative revision of higher education curricula through the development of 14 revised or new learning programs[6] which include systems thinking, transdisciplinarity, social learning and engaged place-based approaches, as well as one new joint, inter-institutional and inter-country field-based course.
- Intellectual capital to ensure wider social learning and longer-term uptake and engagement with the work and objectives of the RESILIM-O program, particularly among future generations of

[5] University of Venda, Mpumalanga University, University of Limpopo and the Southern African Wildlife College in South Africa; and Universidade Eduardo Mondlane and Pedagogical University in Mozambique.
6 Modules and/or courses

managers and actors in the catchment. A critical mass of 27 learning program developers[7] now exists in the LBCIN, with the attitudes and capacities to design, teach and apply science-based strategies that enhance the resilience of people and ecosystems through systemic and social learning approaches.

- Strengthened institutional capacity within the six IHLs for both horizontal (across departments and faculties) and vertical (across organisational hierarchies) collaboration, as well as a good foundation for future collaboration between the six institutions in the network through Memoranda of Understanding (MoUs) covering a five-year period.
- A functional and accessible e-learning platform for the LBCIN network, which can be further developed as a resource for training of interns, youth development programs, design of short courses and for wider social learning amongst catchment stakeholders and beneficiaries.
- A joint academic paper (draft) on the learning program review and revision process.

In September 2019, AWARD ran training on systems thinking with delegates from several African countries participating in an Australian-African awards program for capacity development in systemic environmental management, through the University of the Witwatersrand.

2.2 KRA 2: Water Security and Water Resources Protection for Improved IWRM

Key Area 2 objective: To enhance long-term water security and protection by supporting collective action, informed adaptation strategies and practices and tenable institutional arrangements for transboundary IWRM.

This component of the program focuses on supporting the emerging governance of the Olifants Basin so as to secure sustainable plans and actions for water resources protection within Integrated Water Resource Management (IWRM). This is being done through:

1) governance support to various institutions,
2) development of tools and protocols in support of a decision-support system for IWRM and training in the use of these tools, and
3) mobilising custodianship of residents over water resources through the development of networks with greater capacity for monitoring and action.

A cross-cutting theme involves understanding the potential impacts of climate change through the incorporation of predictions for both flow and water quality.

7 Academics Including heads of departments and lecturers who participated in the curriculum review and revision process

Under **water governance**, much of our focus has been on building capacity and networks for collaborative action through a custodianship or stewardship approach. In resilience terms, this is a form of polycentric governance, which in some instances has been able to compensate for the weakness of DWS structures. While the proposal for operationalising the Catchment Management Agencies (CMAs) seems to be back on track, given the history of this process we will wait and see!

Drought support and institutionalisation of RESILIM-O practices

Rainfall and flow in the Olifants River were extremely low in October and November 2018 and the situation in the lower Olifants started to reach crisis point. The gauge plate had been damaged and could not be fixed by DWS due to financial constraints so that monitoring equipment could not be calibrated. AWARD finally replaced the gauge plate. Multiple warnings were sent out by AWARD through the Early Warning System (eight Zednet alarms were sent between 1st and 19th November) with **no action being taken in response**. Finally this culminated in no flow into the barrage and on the 18th November, Lepelle Northern Water closed the Phalaborwa Barrage so that Kruger received no water. The Blyde WUA placed restrictions as Blyde Dam had been drawn down to 48% over a short space of time. This was followed by a media release by the municipality. An emergency release was made (4.8 m3/s) and then DHSWS Systems Operations asked AWARD to run a scenario and approved a release of 5.9 m3/s) as in the previous two years. They had never been asked to release this quanity of water. AWARD was also asked to run the model 3 times per week so that releases could be reduced if possible. The Olifants farmers (except for unlawful farmers) also practiced rotational irrigation scheduling. However, the situation clearly demonstrated the need to go beyond using releases from De Hoop dam as a "band-aid" solution and to address the governance and management issues that have contributed to the crisis situation. It is for this purpose that the informal governance network that had operated in the Lower Olifants over the past few years was expanded and formalised this year into the Lower Olifants River Network (LORiN).

AWARD also shared the situation on the Hoedspruit facebook page (Blyde Water Resources). The situation is again developing in 2019 as we head towards the summer season.

The inaugural LORiN workshop in November 2018 allowed stakeholders to learn more about the drivers of the current state of affairs in the Lower Olifants and express their concerns to the regulators/managers of the water resources (DHSWS). AWARD compiled data/evidence including a timeline of events and a mass balance model to track water losses from all river reaches feeding into the Lower Olifants. The meeting was very fruitful, with participants identifying both immediate and long-term actions needed to address the issues. As a result DHSWS asked AWARD to summarise the water situation and projected weather for the season.

However, there was unfortunately little traction with the DHSWS Regional Office on action items from the meeting for the remainder of the year. Despite lower than usual flows in May and June, leading to water quantity and quality concerns ahead of the dry season, we were unable to bring DHSWS together with concerned farmers and other stakeholders due to non-availability of key DHSWS staff. In August and September 2019, the Early Warning System indicated that flows in the Olifants River were totally non-compliant with the Environmental Water Requirements. A more permanent solution is needed than periodic releases from De Hoop Dam, to keep the river flowing and address the concerns over unlawful water use upstream for irrigation and the planned transfers out of the Middle Olifants.

Highlights of the year include the establishment of three important networks for water governance:

- The Lower Olifants River Health Forum (LORHeF) was launched on 15 November 2018. This network consists of private nature reserves in the lower Olifants together with various supporting partners, and is facilitating stewardship of water resources through biomonitoring and inclusion of aquatic biodiversity and health into reserve management plans (which previously only focused on terrestrial biodiversity).
- The Lower Olifants River Network (LORiN), launched in Hoedspruit on 28 November 2018, finally brought together government (national and provincial DHSWS) and water-users in the lower Olifants. The purpose was to address the critical water resources governance issues facing the lower Olifants and to gain clarity on roles and responsibilities.
- The Middle Olifants River Network (MORiN) is a cross-sectoral network for collaborative, systemic learning and collective action in the Middle Olifants[8]. The inaugural meeting in March engaged representatives from a range of sectors, including mining, agriculture, conservation, research and government at local, provincial and national levels. This work, being implemented through a sub-grant, also supported revitalisation of the Middle Olifants Catchment Management Forum (CMF) - with support from DHSWS staff. The charter for the Middle Olifants CMF was signed in September 2019. While similar challenges were experienced in the Middle Olifants with DHSWS responsiveness, strong interest has now been established amongst stakeholders to participate in further dialogue and information-sharing.

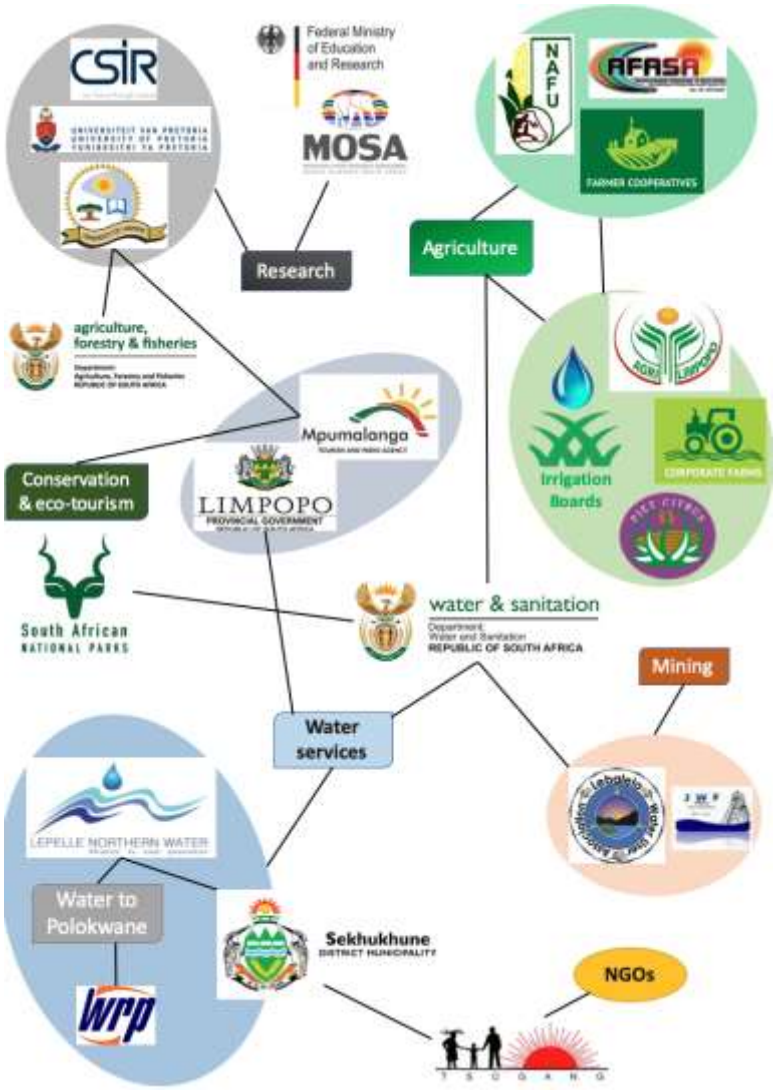


Figure 10: Middle Olifants stakeholder network map

[8] Implemented through a grant to Rhodes University.

Figure 11: LORiN network meeting participants (L) and some of the maps used during the workshop (R).

In response to the agricultural clearing in the Lower Olifants, AWARD submitted detailed comments objecting to the approval of the S24G rectification Environmental Impact Assessment (EIA) for agricultural clearing on one of the farms. The team also met with the consultants who worked on the EIA for the proposed mining by Transvaal Gold Mining Estates (TGME) in the Blyde catchment. The consultants were not aware that the Blyde is a Class I catchment and were unaware of the implications of this for the proposed development. All issues to do with water appear to have been passed on to DHSWS under the WULA process, and there were no clear answers about the water rights of the proposed project. AWARD made it clear that we are not supporting the development in the Blyde. The EIA review completed by EMROSS Consulting in April found that neither of the above two EIAs described above provided enough legitimate information for the developments to be approved, and neither provided clear information about water rights.

In support of good governance and the protection of freshwater resources, AWARD has continued to develop a suite of **management tools and protocols** as part of the INWaRDS decision-support system.[9] This allows for an integrated approach to flow and water quality monitoring, to ensure compliance with standards set by government and stakeholders and is a first for the country and the region.

- A web-based, mobile-friendly version of the Flow Tracker app was developed this quarter to accommodate Apple (IOS) users. The Flow Tracker mobile application[10] has now been downloaded 286 times. Aug: the team had the opportunity to increase awareness of the FlowTracker App to stakeholders in Mpumalanga and at the national level at the Mpumalanga Climate Change Forum.
- A GIS component was included into the InWaRDS dashboard. A mass balance model was developed to track water losses from all river reaches feeding into the Lower Olifants and so facilitate better management of declining river flows and dam operations. An interface was developed through which members of the public can upload their rainfall data. This is a first, and is helping to fill gaps in the South African Weather Service data. Technical manuals for the InWaRDS system are nearng completion.

[9] Integrated Water Resources Decision Support System
[10] Available at https://play.google.com/store/apps/details?id=flowtracker.award.org.za.flowtracker&hl=en

- Funding was secured through JRS to integrate InWaRDS with the Freshwater Biodiversity Information System (FBIS) developed by the Freshwater Research Centre, and expand it to all Lowveld rivers. This will allow for integrated analysis of flow, water quality and aquatic biodiversity data across the whole region.
- The near real-time flow and water quality monitoring system has continued to provide important redundancy for the aging DWS monitoring network, despite some technical problems and a need for regular maintenance.

The sub-grant project **Mangrove Restoration through Community Participation in Limpopo River Estuary, Mozambique** was officially launched in November 2018 and completed in October 2019. Achievements include:

- Hydrological restoration of 15 ha of mangroves through excavation of four channels by 264 local community members (more than 50% women). The total length of channels was 1,190 m and 3,570 m^3 of sediment was removed.
- Training of 78 primary school teachers (61% women) from 11 schools on how to integrate thematic content on mangrove ecology, climate change, sustainable use of mangroves, ecological and economic value of mangroves and mangrove restoration processes into the different disciplines and levels.
- Participation of more than 200 local primary school students in field lessons at the mangrove nursery and rehabilitation site in Xai-Xai.
- Successful establishment of Natural Resource Management (NRM) Committees for the two areas, with training in environmental legislation, rights and duties regarding NRM, climate change, gender and diversity, equity in decision-making and financial management.
- Completion of the delimitation process for Zimilene and Zongoene-Sede, contributing to better natural resource management of a total area of 38,590 ha.
- Successful propagation of 24,000 mangrove plants (*Avicennia* species) and repair of the greenhouse damaged by strong winds associated with Cyclone Idai.
- Restoration of 2 ha of mangroves through planting campaigns carried out by local community members and students in September 2019 (to continue until January 2020, since setbacks associated with Cyclone Idai delayed the production of mangrove seedlings).
- Catalysing other mangrove restoration work on the Mozambique coast through supply of seedlings to other organisations in Maputo and Inhambane as well as knowledge transfer.

Figure 12: AWARD visit to the mangrove nursery in Xai-Xai

2.3 KRA 3: Natural resources management of high-priority areas

Key Area III objective: To conserve biodiversity and sustainably manage high-priority ecosystems by supporting collective action, informed adaptation strategies and practices and tenable institutional arrangements.

Work in this KRA is focused in two geographical areas: the Blyde River sub-catchment and the Legalameetse Nature Reserve in the upper Selati sub-catchment. Both are priorities for RESILIM-O because they are high biodiversity areas and strategic water source areas. The upper reaches of the Blyde Catchment in the north-eastern Drakensberg escarpment receive very high rainfall (1000 to 1500mm) and are critical for water security to downstream towns and communities (Bushbuckridge, Acornhoek, Hoedspruit and Phalaborwa amongst others) and agriculture, especially the large Hoedspruit farming area which is fully dependent on the Blyde Catchment for irrigation water. Although this area is partially protected through the Blyde River Canyon Nature Reserve (BRCNR) along with a few smaller nature reserves, large portions of these catchments have been transformed through plantation forestry. The Blyde area has been the focus of numerous initiatives and considerable investment to clear alien vegetation and improve water flows but is still being threatened by invasive alien plant species and soil erosion, particularly associated with timber plantations. Legalameetse, on the other hand, has been afforded protection as a provincial reserve but as a park under land claim, the institutional arrangements are in a state of flux. Indeed, this project is the first of its kind in the Limpopo Province and a priority for the MEC.

Figure 13: Planning for collaborative clearing of inaccessible areas on Hebron Mountain

The **Blyde ecosystem restoration project** has successfully institutionalised integrated planning and implementation of restoration activities in the Blyde catchment. The Blyde Restoration Group, initiated through RESILIM-O, met again this year (for the fourth year running) to align their annual operational plans for alien plant clearing, using the Invasive Alien Plant Inventory Map co-developed by the group. Integrated restoration finally began to address all parts of the landscape this year, including inaccessible areas (1,078 ha cleared through the innovative partnership between the High Altitude Teams, K2C Restoration Champions team and the South African Air Force, which provides helicopter access), remote areas accessible on foot (160 ha cleared by "intermediate" teams such as the Restoration Champions), accessible areas (5,895 ha cleared by "normal" clearing teams), and also now wetlands (Figure 13). Having different teams working together in the field also provided valuable opportunities for informal capacity development and skills transfer.

Other highlights of the year include:

- Confirmation of peat wetlands in the upper Klaserie, Sand and Blyde catchments, leading to collaboration around wetland assessment and restoration between wetland specialists, AWARD, K2C, MTPA, Working for Wetlands and DEFF Forestry.

- The **Restoration Custodianship project** (grant implemented by K2C) successfully cleared 160 ha of invasive alien trees from rugged and inaccessible areas in collaboration with the High Altitude Teams (HAT) from Mpumalanga and Limpopo. The enthusiasm, dedication and effectiveness of this team of locally-based young people has been inspirational. AWARD supported the team with capacity development in computer literacy, report writing and other key skills throughout the year, to develop more meaningful employment and career paths and support development of custodianship.
- Formation of the Sand Catchment Restoration Partnership between the Sabi-Sand Wildtuin and the four Blyde CPAs (as the new land owners). The partnership is aimed at collaboration around ecosystem restoration, with SSW committed to funding an "intermediate" clearing team for a year (with capability to work in remote areas). This represents significant progress towards the CPAs playing a much larger role within the Blyde restoration process.
- Near-finalisation of the Lowveld Plantations Restoration Plan, a sub-component of the larger Blyde Restoration Strategy and aligned with the Blyde Nature Reserve Management Plan.
- Two training workshops for Working for Water restoration practitioners in GIS, mapping and data management.
- Establishment of permanent vegetation monitoring plots and hydrological monitoring equipment in the Lowveld Plantations. This will allow for long-term data collection to support assessment of the impact of restoration work as it proceeds beyond RESILIM-O. The data will be collected by the K2C Environmental Monitors and the process overseen by SAEON.
- Many opportunities for sharing our experiences and learnings, including a learning exchange to the uMngeni and Cathedral Peak catchments and presentations at the Conservation Symposium in KwaZulu-Natal in November 2018, and an opportunity to contribute to important discussions around restoration nationally and raise the profile of the work in the Blyde at a DEFF NRM Knowledge Symposium and at the Society for Ecological Restoration conference in September.

Figure 14: Left: High Altitude Teams clearing remote areas of the Blyde Canyon. Right: Meeting of the Sand Catchment Restoration Paratnership in August

A second major thrust for AWARD under KRA 3 is that of support for governance and management arrangements for the Legalameetse Nature Reserve (LNR) in the upper Selati sub-catchment. The **co-management support project** aims to pilot effective support for co-management of protected areas[11].

[11] All provincial parks except one are under land claim in Mpumalanga and Limpopo and are legally required to be co-managed by the new land owners and the relevant conservation authorities. Without proper processes in place for good governance through co-management, we are at risk of losing prime biodiversity areas as well as the benefits to claimants and the wider community.

AWARD has been working with the six CPAs[12] involved in the land claim since 2015 to strengthen communication, trust, collaboration and good governance in order to make a co-management agreement more sustainable and effective. This has included institutionalising youth participation in the Legalameetse Management Committee (LMC) through the LNR Youth Forum and K2C EMs, who have been integrally involved in planning and implementing community-led activities this year.

Highlights for the year include:

- Establishment of an Interim Co-management Committee (ICMC) through which LEDET and the LMC will work together to find common ground and work out their respective roles and responsibilities. The stalemate between LEDET and the communities over the Co-management Agreement (reported last year) has not yet been resolved, but the establishment of the ICMC is a positive step forward. The Co-management Agreement is undergoing a legal review as part of attempts to break the impasse around the signing of this agreement.

Figure 15: Mirror-back shared learning event for government, at which agreement was reached to establish an interim co-management committee

- Deepening of our engagement with LEDET directorates and departments whose activities relate to co-management, in an attempt to improve the coordination of activities[13].

Figure 16: Co-management shared learning event for CPAs from across the country in February

- A shared learning event in February brought CPAs from across the country together to share their lessons and establish valuable contacts[14]. Another shared learning event in August provided feedback to key government officials on the co-management process and governance issues. It was at this meeting that agreement was reached on the establishment of the ICMC.

- The capacity for proactive planning and management in LNR was enhanced this year through development of three important tools: a Development Framework, a Beneficiation Framework and the Reserve Management Plan (through the EMROSS sub-grant). These tools have been collaboratively developed with the LMC and will help them to evaluate proposed developments and benefit opportunities in an integrated, systemic and equitable way. This is especially

[12] Communal Property Associations are an institutional form designed to represent land claimants.
[13] Including the Chief Directorates for Biodiversity and Natural Resources, Wildlife, State Owned Nature Reserves, Protected Areas and the Tourism and Development Directorate (LTA).
[14] LNR, Blyde and Doornkop CPAs (Mpumalanga), Makuleke CPA (Limpopo), Khomani San (Northern Cape), as well as the KZN Provincial People and Parks Forum and the Swazi Tourism Authority.

important given the history of previous attempts to impose inequitable or non-transparent developments in the reserve.

- Development of the Beneficiation Framework was accompanied by planning for the LNR Cultural Day, organised and run by communities (held finally in October 2019). The communities are also in the process of running a natural resource use survey to quantify community use of natural resources being harvested in the reserve, and establishment of a business entity to allow for participation in proposed developments.
- Agreement with the Legal Resources Centre to support the LMC with the long-standing lack of resolution of four settlement claims as part of succession planning.

2.4 KRA 4: Support for climate change adaptation strategies and practices

Key Area 4 objective: To reduce vulnerability to climate change and other factors by supporting collective action, informed adaptation strategies and practices and tenable institutional arrangements.

This Key Result Area contributes to the overarching RESILIM-O goal of building climate resilience in the Olifants Catchment. Due to the cross-cutting nature of climate change (CC), the majority of project activities in KRA 4 are about embedding climate change thinking and climate change adaptation into other RESILIM-O projects. Work under KRA 4 this year included: (1) facilitating adaptation by engaging stakeholders in climate change conversations that link to their values, needs and interests, and (2) enhancing the resilience of small-scale farmers to climate change.

Figure 17: Dr Sharon Pollard (AWARD), facilitating the opening session of the DICLAD shared learning event. Participants are indicating that there is a lack of understanding of climate change.

Highlights under the first area of work, the **Dialogues for Climate Change Literacy and Adaptation (DICLAD**) included a series of engaging climate dialogues with a group of young environmental managers from the Blyde Restoration Custodianship team and K2C Environmental Monitors. These dialogues were specifically tailored to be relevant to the work of these two groups (EMs monitor and advocate for environmental issues and concerns in their communities, while Restoration Champions work in invasive alien clearing teams). Thus, we were able to expand our dialogues to a new sector and focus, while drawing upon lessons and experiences from previous dialogues with small-scale farmers. We took a core group through the entire DICLAD process (Module 1 to 3) as a continuous meaning-making and capacity development process on climate change adaptation and literacy.

A shared learning event in August was a particularly significant project milestone which brought together climate activists, researchers and policymakers working on climate adaptation from around the country. The event provided an opportunity for participants to reflect deeply on their own practice, and raised important questions about the climate adaption space in South Africa, including the general exclusion of water security issues, personal threats to safety and corruption. It also provided support to the growing

community of practice around climate change adaptation, as embodied by the Adaptation Network (of which AWARD is a member).

As part of our commitment to sharing lessons from the DICLAD process with our community of practice at provincial and national levels, we participated in several external forums including the FEDUSA[15] Climate Change Policy Inception Workshop (October 2018) and the AWARD session on systemic adaptive governance at the 4th National Conference on Global Change (December 2018). We also provided detailed comments on the draft national Climate Change Bill, and endorsed an open letter to the Presidency calling for an emergency sitting of Parliament to discuss the socio-economic implications for South Africa of the IPCC[16]'s Fifth Assessment Report. In addition, we contributed to the development and review of key national and provincial documents related to climate change during stakeholder consultation sessions for the following:

- National Climate Change Adaptation Strategy (NCCAS) (Extended National Committee on Climate Change Stakeholder Dialogue, November 2018)
- Ecosystem-based Adaptation Action Plan and Priority Mapping (Mpumalanga Climate Change Forum meeting, November 2018)
- Mpumalanga's Provincial Climate Change Mitigation Strategy (Mpumalanga Climate Change Forum meeting, February 2019)
- National Planning Commission's "Pathways to a Just Transition" dialogues on the implementation of the National Development Plan (February 2019)
- Development of a National Climate Risk and Vulnerability Framework (August 2019)
- Mpumalanga's Environmental Outlook Report (September 2019)

We further supported the embedding of climate change into government by supporting the Mpumalanga Climate Change Forum[17] through our participation and a formal letter of support. This has been a useful networking forum and has also allowed us to showcase RESILIM-O work (for example, the Flow Tracker app as an example of a climate change information tool for provincial and local government stakeholders).

Figure 18: Left: Climate dialogue with Environmental Monitors. Right: National Disaster Management stakeholder showing a strong interest in the Flow Tracker app for managing climate risks

A second thrust, and one which falls under the Resilience Support Initiatives (see KRA 1), the **Agri-SI (Agricultural Support Initiative)**, is designed to strengthen resilience and adaptation of small-scale farmers to climate change through a number of collaboratively-designed adaptation options. These include

[15] Federation of Unions of South Africa
[16] Intergovernmental Panel on Climate Change
[17] A provincial forum run by DARDLEA

improved soil and water conservation techniques,[18] farmer learning groups, collective action and livelihood diversification. These strategies are underpinned by two sub-grants to support small-scale farming in (a) the lower Olifants (Mametja area) and (b) two districts in the middle Olifants (Sekhukhune and Capricorn). This project has managed to leverage a small amount of additional funding.

Work with the smallholder farmers in the middle and lower Olifants (under the Ukuvuna and Mahlathini Development Foundation sub-grants) is really starting to bear fruit after two years of engagement. From the successful development of markets for their organic produce, to self-organisation around water and seed sharing, to increasing uptake and experimentation with innovative farming practices, these projects have stimulated peer learning, interest in farming, and increased the agency of farmers.

An external evaluation of the Agriculture Support Initiative in the **Middle Olifants** (Ukuvuna Harvests sub-grant) highlighted the success of this project in developing agency among small-scale farmers through the network of learning groups established, including confidence to experiment. This was achieved through careful development of catalytic and inspirational leadership at village level and the creation of simple interaction platforms to facilitate knowledge sharing and adoption. This has allowed the groups to begin to grow organically, as farmers invite others to join. Through the evolution of these functional local institutions, new interaction platforms for community members to discuss agricultural production (which did not exist prior to the project) have emerged. Given that the clusters are voluntary and the leaders highly committed, they are likely to be sustained beyond the end of the project. The project also successfully built an understanding of agroecology as a relevant climate change adaptation in a local context where very little understanding was present before.

By the end of the project Ukuvuna Harvests was working with 266 small-scale farmers (81% women) in the Capricorn and Sekhukhune districts in the Middle Olifants, a significant increase from the initial group of 74 and an increase of 21% above the target of 220 households. The project covered two local municipalities, 5 wards and 16 different villages.

Key achievements:

- The project was largely successful in **introducing the concept and principles of agroecology** to communities that had no history of agricultural adaptation. Farmers across all sites now see agroecology as an appropriate and accessible solution to their soil and water management challenges under climate change. They adopted diverse techniques to reduce vulnerability of crops to water stress imposed by climate change (the most popular being mulching).
- **Improved livelihoods** (access to diverse foods, increased yields, emergence of new income streams). While the scale of benefits is variable, there have been stories of livelihood change for most farmers over the years.
- **Psychological fulfilment** (appreciation of health benefits, self-reliance, confidence, opportunity to lead).
- **Improved community status** as a result of recognition of project activities by municipal authorities.
- **Recognisable change in micro-environments** around homesteads (greening of spaces).
- **Systematic (better space utilisation) and consistent (planting appropriate crops across seasons) vegetable production** through adoption of agroecology. In the past, most farmers planted crops in a haphazard way and were not producing throughout the year. A councillor for one of the villages

[18] In the case of small-scale farming, agro-ecological approaches are widely considered to support farmers to be responsive to and adapt to change. These approaches not only focus on the technical aspects of soil and water conservation but also on social processes of learning and collective action. Farmers participate in experimentation and monitoring their own practices, creating a vision of development as social learning.

commented that “you can tell the difference between a farmer trained by Ukuvuna Harvests and a farmer who is not getting support from anyone”.

- **Diversification of crops** through improved knowledge, knowledge sharing and experimentation.

The various components of the project are not only replicable and adaptable but can be up-scaled. The lessons learnt provide insights for better design of agricultural adaptation projects in Limpopo Province and other semi-arid parts of the country.

Small-scale farming in the **lower Olifants** is being supported by a grant to Mahlathini Development Foundation. This year 105 farmers (70% women) were involved in six learning groups. The final report for this project is due in November.

Highlights of the year include:

- Water committees established by smallholder farmers in the lower Olifants have made progress with organising neighbourhood groups of 10-15 families who work together to collect money for managing and accessing local water sources (springs or boreholes). Committees from different villages have actively sought each other out to learn from each other. The Water Committee formed at Sedawa has put together around R12, 000 to drill a borehole, and are planning to collect enough to install at least two. They have also been proactive in writing to the Maruleng LM, various NGOs and the drilling company for assistance with funding.
- The partnership with Hoedspruit Hub has enhanced farmer livelihoods by providing marketing support for organic vegetables and herbs (20 farmers in Mametja). The organic herb and vegetable marketing process with Hoedspruit Hub was re-launched in the form of a “box scheme”, where clients order boxes for a fixed price, with the box contents varying according to what is available. AWARD has supported participation in the PGS (Participatory Guarantee System), a locally focused quality assurance system which certifies organic producers based on active participation of stakeholders. The system is built on trust, social networks, and peer assessment of each others’ fields. Certification may help farmers with one of their biggest challenges: accessing markets for their produce. The PGS Pledge Agreement was signed in September 2019.

Figure 19: Farmers sharing knowledge, innovations, experiences and produce at the Open Day on 14 March 2019

AWARD supported the above work with farmers through three experiential learning exchange visits or farmer "open days" (October, March and August), allowing farmers to share seeds, experiences, farming practices and innovations (Figure 19). Farmers were involved in organising many aspects of these events themselves. AWARD also supported the development of a broader network of agroecology stakeholders in the region, including NGOs, CBOs, government departments, research organisations and private businesses, through inviting stakeholders to the above-mentioned learning exchanges, and through an Agroecology Network meeting in November 2018.

An important area of policy addressed this year was the rights of smallholder farmers to save and distribute indigenous seed. Several workshops to raise awareness about the "Seed Bills" were held in the middle and lower Olifants.

2.5 KRA 5: Sharing of experiences and lessons within the ORB and other basins

Twelve **shared learning** events were held this year through a sub-grant to Aves Africa. These have been covered under the relevant KRAs. Events included:

- Sharing lessons on land-use planning for biodiversity and climate change from municipalities of the lower Olifants with other municipalities and stakeholders (October)
- Building a sustainable future for AWARD through sharing lessons and futures planning (November)
- Building a network for river health in the lower Olifants (LORHEF) (November)
- Shared learning for Civil Society Organisations (November)
- Sharing lessons and building networks for co-management of priority protected areas (February)
- Sharing lessons and building networks for climate change adaptation amongst small-scale farmers and partners (Farmer Open Day, March)

- Building networks for collective, systemic water resources protection in the middle Olifants (March)
- Livelihood Diversification for Climate Change (August)
- Shared Learning of experiences on climate change adaptation and capacity development (August)
- Co-management mirror-back to Government (August)
- Two joint symposia at the Society for Ecological Restoration conference: 1) Towards a praxis of systems thinking, learning and collective action for resilient and equitable restoration, and 2) Shifting the role of science in community-based landscape restoration: from science FOR to science WITH society (September)

Figure 20: Joint AWARD-Tsitsa Project symposium at the SER conference in September

In addition to the above shared learning events, AWARD members attended 13 conferences which provided further opportunities to share and showcase our work (see Section 1.3). Several community engagement events were also held to mark international environmental awareness days (Forests Day, Water Week, and Wildlife Day). These included a movie-showing, a field visit to Mariepskop by Grade 5 learners and talks on water at a local school.

2.6 KRA 6: Monitoring, Evaluation, Reporting & Learning and Media and Communications

Key Area 6 objective: Strengthen organisational learning, integration and coherency through continuous reflective and collaborative processes.

Our "hybrid" **Monitoring, Evaluation, Reporting and Learning (MERL)** model continues to guide processes of data collection, analysis, learning and decision-making within the organisation. The Annual Report for the 2017/2018 financial year was submitted timeously on 1 November 2018, and Quarterly Reports for the current year were also all submitted on time. Highlights of the year included:

- The Reference Group meeting in November 2018 to reflect on the highlights and innovations of RESILIM-O and what would constitute effective "handover" in nine months' time under each of the different program areas. The final Reference Group meeting for the program will take place in November 2019.
- Several MERL-focused RESILIM-O days were held through the year to reflect on quarterly results, project outcomes and impacts and plan for project final reports. A reporting template was developed to encourage evaluative final reports that link to the core RESILIM-O themes of resilience-building, social learning and systems thinking.

- Our pioneering hybrid and complexity-aware MERL approach continued to attract interest from natural resource management professionals and researchers working in other catchments. We shared lessons and experiences with the Western Cape Biosphere Reserves Network and at the SER conference (see KRA 5).

Figure 21: Designer Dudu Coelho meets with in-house designer Lizl King at the AWARD offices to discuss resource templates and designs

A major achievement under **media and communications** this year was the improvement and expansion of the AWARD website (http://award.org.za), with access to resources, links to Facebook and Twitter and the addition of a "news" page for sharing local, national and international news of relevance to AWARD's work. A "bumper" newsletter was widely distributed to stakeholders and partners in April, giving a summary of the achievements of RESILIM-O and insight into the scope of the work, with links to the website. Shorter newsflashes were distributed each month thereafter, focusing on recent events.

Figure 22: Kim Ward (CSV) and Lizl King with some of the communications materials.

A wide range of communications materials was also developed this year. More than 40 resources have now been uploaded to the AWARD website, including flyers, brochures, booklets, guidelines, presentations, games, reports and newsletters. The new website steadily grew its audience in the last half of 2019, reaching 2,642 users. Several resources were printed and delivered to AWARD.

AWARD RESOURCES PRINTED	
Resource Pack folder	500
Flow Tracker flyer	100
Climate Change Core Concepts flyer (English)	300
Climate Change Core Concepts flyer (Sepedi)	300
Climate Change Scenarios flyer	50
Biodiversity CBA series no.1 flyer	50
Biodiversity CBA series no. 2, 3, 4, 5, 6 & 7 flyers	10 of each
Biodiversity Beginners Guide	100
MERL flyer	50

More than 2,500 copies of communications materials were distributed in total this year, via the website and distribution at workshops and other events. The Flow Tracker App was downloaded 286 times.

A series of interviews with Agri-SI farmers was aired on SABC radio (Thobela FM), reaching more than 2.5 million people.

2.7 KRA 7: Internal governance

Key Area 7 objective: To ensure good programmatic governance through developing and maintaining organisational capacity and effectiveness through tenable management systems and sub-contract management.

Staffing and sustainability planning

AWARD started close-out planning in July and a formal close-out plan was submitted to USAID in September. The planning included developing careful monitoring systems for RESILIM-O expenditures versus those of AWARD funds. A consultant was appointed to support senior staff to think about their future plans in relation to AWARD's future, and senior staff held conversations with all staff members on their future plans.

Cryton Zazu and Vhutshilo Mudau left AWARD in January and March respectively. Several staff moved onto part-time contracts, including Charles Chikunda, Reuben Thifhulufhelwi and William Mponwana. Reuben will be starting a PhD and William a Master's degree at Rhodes University; their postgraduate projects are focused on RESILIM-O work. Two familiar faces rejoined the AWARD team in Q3: Lilian Goredema was appointed as a consultant to assist with Co-management Support project, and Moredecai Hove was appointed as Financial Assistant.

Other management issues to note include the following:

- We received clean audits for both the IFRS statutory audit and the US GAGAS audit. These were submitted on 30 September 2019.
- AWARD held a Board meeting in May 2019.
- The USAID evaluation took place in July and August, with the final report to be submitted in October.

Fundraising

Two fundraising proposals were successful this year, for funding from JRS to continue work on the InWaRDS water resources decision support system (signed in September 2019) and from DEFF under the Land User Incentive (LUI) Scheme to continue work in the Blyde catchment.

A large number of other proposals were submitted this year including:

- Resilient Waters (under discussion)
- Shared Rivers Prize (no response received)
- GDSKF small grant to support the Greater Kruger Spatial planning
- WRC proposal for Blyde peatlands (still waiting)
- Global Climate Research Initiative with Rhodes
- GEF challenge (declined)
- Two to the Green Climate Fund (administered by SANBI) (one declined, one shortlisted for possible collaboration with other applicants)
- Several other meetings to explore possible collaborations.

Knowledge management

The AWARD Knowledge Management System (KMS) underwent several revisions and improvements in response to feedback from staff. October 2018 acted as a trial period for the submission of MERL data using the KMS, which went reasonably smoothly. Project teams therefore started using the KMS for submitting their MERL data as well as historical documents and photographs. Access to the KMS was granted to the IHL sub-grant team to facilitate sharing of resources in the LBCIN network.

Contractual requirements

The contractual requirements governing our Cooperative Agreement with regard to the Environmental Monitoring and Management Plan (EMMP), as submitted with our 2016 Work Plan, continue to be upheld and monitored across all program activities. All consultancies and sub-contracts have equally been informed of this requirement. We have plans to ensure that our sub-grantees develop their own EMMPs, which we will monitor during the course of program implementation.

Grants and contracts management

Four sub-grants closed-out this year, with a further two currently in close-out phase. Two follow-on sub-grants were issued during 2019 to Rhodes University for continuation of the work supporting networks for collaborative, systemic action in the Middle Olifants River Catchment, and to Aves Africa for ongoing support of the shared learning events. The total number of sub-grants awarded under RESILIM-O to date (including new and follow-on grants) is twenty.

Table 1: Current sub-grant projects as at September 2019

Sub-grantee	Sub-grant Title	Follow-on	New	Period of Performance	Budget	Comment
Mahlatini Development Foundation	Support for Small-Scale Climate Smart Agriculture (Lower Olifants)	**X**		Feb'18 -Oct'19	1,171,121.00	Project complete. Close-out in progress
Ukuvuna Harvests	Support for Small-Scale Climate Smart Agriculture (Sekhukhune Middle Olifants)	**X**		Feb'18 -Jun'19	1,240,453.00	Project complete and closed-out
Rhodes University	Capacity Development through Institutions of Higher Learning	**X**		Mar'18 - Apr'19	1,031,440.00	Project complete and closed-out
Aves Africa	Support for shared learning for collective action		**X**	Apr'18 – Mar'19	1,300,000.00	Project complete and closed-out
Rhodes University	Networks for collaborative, systemic action in the Middle Olifants River Catchment		**X**	Jun'18 – Apr'19	529,852.00	Project complete and closed-out
CSV	Media and Communications		**X**	Aug'18 – Oct'19	793,199.00	Website & communications materials in progress
K2C	Blyde Restoration Custodianship project		**X**	Aug'18 – Jul19	779,711.00	Project complete and closed-out
CDS-ZC Mozambique	Mangroves rehabilitation in the Limpopo river estuary		**X**	Sep'18 – Oct'19	1,383,270.00	Milestone 6 of 7 complete
EMROSS	Support for Strategic NRM & Environmental Regulation in Priority Areas of the ORC		**X**	Sep'18 – Dec'19	998,699.00	Ongoing (cost reimbursable)
Aves Africa	Support for shared learning for collective action	**X**		Apr'19 – Mar'20	1,967,000.00	Ongoing, 3 events complete
Rhodes University	Networks for collaborative, systemic action in the Middle Olifants River Catchment	**X**		Apr'19 – Nov'19	321,653.75	Milestone 1 of 4 complete
Total					**9,859,745.00**	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