SASSCAL – promoting knowledge-based policy- and decision-making in support of attaining the SDGs

By Dr. Peter Erb

Weather and the atmosphere ignore national boundaries, as do fluxes of water, food and migrating people. Many ecological processes and mechanisms link neighbouring countries functionally. The fate of downstream riparian communities may depend on decisions taken by upstream communities in a different country; similarly, fire, drought and epidemics are accompanied and partly controlled by trigger mechanisms, tipping points and cascading effects at a regional or even larger scale. Numerous transboundary agreements, institutions, commissions and governance instruments have been or need to be installed to jointly manage important resources and ecosystem services. These include measures to adapt to climatic and other environmental changes, and to improve economic and societal development and integration at multinational scale.

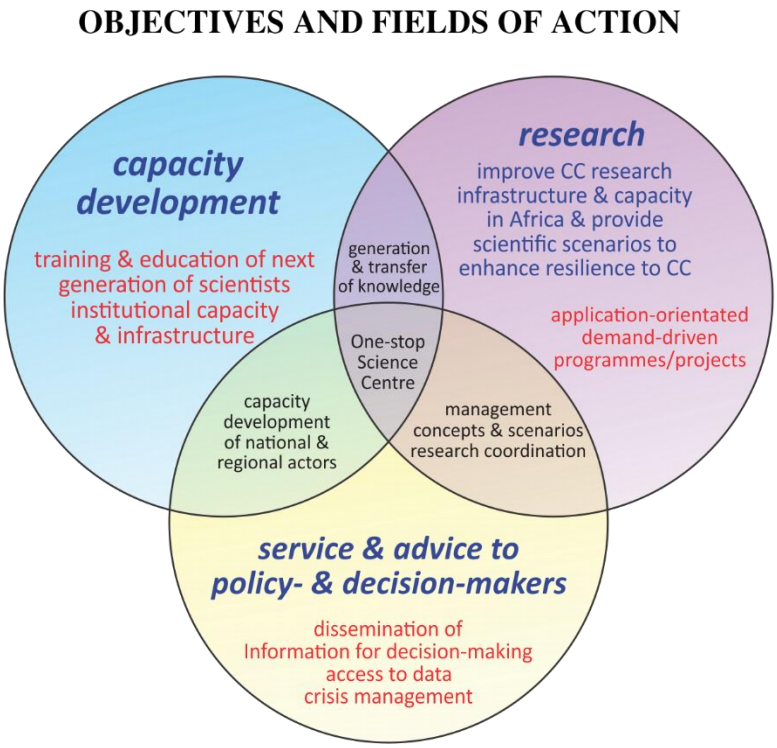
All the above examples strengthen the notion that, in addition to the local grass-roots level and the national priority of political decision-making, it is essential to also address the regional dimension of environmental change. Regional Science Service Centres aim to achieve such a regionally integrated approach to adapting to and mitigating climate change and its consequences, based on robust scientific data, and politically defined by the needs and demands of regional stakeholders.

If African policy-makers are to formulate informed, tested and scientifically sound decisions within the framework that is provided by the United Nations 2030 Agenda for Sustainable Development and that take due account of local conditions, quality data must be collected by way of demand-driven research, and support tools and scientific capacities must be developed. The role of science in this context, must be understood as a service to those societies that are most severely affected by climate change.

Following the recommendations of the African Union to have a coordinated network of climate service institutions established that share scientific information for policy adjustments and the design and implementation of appropriate adaptation and mitigation actions, Angola, Botswana, Namibia, South Africa, Zambia and Germany established the **Southern African Science Service Centre for Climate Change and Adaptive Land Management** (SASSCAL) with seed funding from the German Federal Ministry of Education and Research (BMBF). The regional SASSCAL office to coordinate the activities is based in Windhoek.

The objective of SASSCAL is to enhance the capacity of policy- and decision-makers to provide science-based solutions for current problems and future risks, in particular with regard to climate change and the associated land management practices. To this end, the Centre will contribute to strengthening existing and developing new capacities for application-oriented scientific research and science policy consultations on climate change, adaptive land management and sustainable development.

SASSCAL has three interconnected functions, namely research management, capacity development and service brokerage.



Examples of SASSCAL's activities during the period 2013 to 2017 include the establishment of a science portfolio with 88 research tasks that are managed within the thematic areas of water, agriculture, forestry and biodiversity, with climate as a cross-cutting theme. SASSCAL supports the development of several remote sensing applications for flood risk management, mapping services, for example, on changes in land coverage, and the development of a user-friendly regional climate modelling system. A number of studies are conducted to improve knowledge on transboundary groundwater flow, water quality and quantity variations and the understanding of groundwater-related processes that are needed for water management purposes.

Other scientific activities are concerned with the establishment of plant and vegetation databases, baseline inventories and biodiversity observatories, and with the monitoring of agricultural ecosystems. Research is conducted on methods for rangeland rehabilitation, the effects of bush encroachment, methods to improve soil fertility as well as on the effect of climate variations on the sowing date of principal food crops.

Additional research tasks deal with forest resource assessments, human-wildlife interactions in agro-ecosystems and with the cultivation, value addition and marketing of climate-smart emerging crops to improve food security.

Of importance is the establishment of a weather observation network. In cooperation with the national weather authorities, SASSCAL installed 50 Automatic Weather Stations (AWS) to contribute to the national meteorological networks. The number of AWSs has been increased to more than 150 stations across the region. Some of these have been installed by SASSCAL, while others are maintained and monitored by SASSCAL on behalf of national agencies. All AWSs send measurements in near real-time via cell phone networks or satellite to the SASSCAL server and the meteorological services. Increasingly, partners are linking their AWSs to the SASSCAL website. Processed results are available in open access on the website, allowing for comparison of stations and periods.

An Open Access Data Centre (OADC), which is the fundamental data and information network within SASSCAL, linking researchers and data providers with the SASSCAL National Nodes and Regional Secretariat into an information sharing network, is being established in Windhoek with support infrastructure in the remaining four African National Nodes. The OADC plays an important role in assuring that information that is fed into the SASSCAL system is standardised, verified and monitored. The data aggregated in this way are transformed into knowledge products that form the basis of the services brokerage function of SASSCAL. User-friendly tools for policy- and decision-makers in the form of dashboards, maps, policy briefs, etc. are developed and distributed. The OADC will soon be transformed into a Competence Centre with the responsibilities for data collection, data analysis, knowledge and technology transfer, and Science Communication to focus on translating all these services and products for the stakeholders' use at all levels.

Capacity development interventions include capacity building interventions for communities on natural resource management and monitoring as well as the general enhancement of regional research capacity. Formal MSc courses deal with Applied Science on Earth Observation, Geographic Information Systems and Remote Sensing; Applied and Environmental Geology; and Dryland Forestry. Diploma courses are offered on Meteorology and Climatology as well as on Climate Change Awareness.

So far, almost 100 students at various graduate levels have successfully completed their studies within the SASSCAL research projects, while 130 students are currently registered with SASSCAL. In addition, a significant number of non-SASSCAL-funded students at all graduate levels are currently involved in SASSCAL research projects.

Some €24 million (Euro) have been invested in a research programme that is supported by more than 70 research and academic institutions with inter- and multidisciplinary teams. In total, more than 460 individuals are involved in SASSCAL's research and capacity development activities, which are aimed at enhancing the decision-making capacity within the Southern African region for the attainment of the Sustainable Development Goals (SDGs).

It is the objective of SASSCAL to align its work with the development goals of regional, continental and global umbrella organisations, as can be seen from the range of activities that SASSCAL is engaged in. SASSCAL contributes towards the attainment of the various

development plans of the Southern African Development Community, as well as towards the African Union's 2063 Vision and Action Plan.

At the highest level, SASSCAL derives its global mandate from SDG 13 (*Climate action*). SDG 13 makes the commitment to "strengthen resilience and adaptive capacity to climate-related hazards and natural disasters". It is the mission of SASSCAL to contribute towards the eradication of poverty in general through specific actions in the fields of food and water security and the sustainable utilisation of natural resources and terrestrial ecosystems.

The following select sub-goals of the SDGs illustrate SASSCAL's commitment to support sustainable development in line with the UN resolution:

- SDG 1 (*No poverty*) aims at building "the resilience of the poor and those in vulnerable situations and reduc[ing] their exposure and vulnerability to climate-related extreme events …".
- SDG 2 (*Zero hunger*) seeks to "by 2030, ensure sustainable food production and incomes of small-scale food producers, in particular women …".
- SDG 6 (*Clean water and sanitation*) has set the goal "to implement integrated water resources management at all levels, including through transboundary cooperation".
- SDG 15 (*Life on land*) calls for the protection, restoration and promotion of terrestrial ecosystems, for the sustainable management of forests, and for reversing desertification, land degradation and halting the loss of biodiversity.

For its new Science Plan (2017 to 2021), SASSCAL identified the following five Research Priority Areas (RPAs), namely i) food insecurity, ii) water insecurity, iii) declining and threatened biodiversity, iv) deforestation and degradation of forests and v) reliable climate services in the SASSCAL countries. To finance this second phase, the BMBF has pledged an additional €10 million. Within this integrated framework, SASSCAL-supported research will improve the understanding of climate and land management change impacts, on the natural and socio-economic environment in all identified RPAs. This will equip SASSCAL to provide services and develop products as needed by end-users.

While SASSCAL will not be able to resolve the issues associated with climate change, the Centre is well-placed to contribute meaningfully to the provision of a scientific knowledge-base on which informed decisions and policies in favour of the attainment of the SDGs can be made. By way of targeted capacity development interventions, SASSCAL will ensure that a new generation of African scientists will generate data and produce knowledge that is of relevance to the SADC region.

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