

## **Leveraging the Copernicus Emergency Management Service to Facilitate Risk-Informed Development within TFCAs in the Southern African Development Community (SADC): Applications and Access Across Sectors**

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[Transfrontier Conservation Areas](#) (TFCAs) within the Southern African Development Community (SADC) are among Africa's most important ecological and socio-economic landscapes. Spanning national borders, they support biodiversity conservation, tourism, regional integration, agriculture, water resources, and local livelihoods. However, increasing climate variability and environmental change are intensifying risks such as floods, droughts, cyclones, wildfires, and land degradation, affecting both ecosystems and communities. Addressing these challenges requires coordinated, data-driven, and transboundary approaches that support disaster risk reduction and sustainable development.

The [Copernicus Emergency Management Service \(CEMS\)](#), developed under the European Union's Copernicus Programme, provides an important opportunity to strengthen risk-informed development across TFCAs. Through satellite observations and geospatial modelling, CEMS delivers timely and reliable information that supports preparedness, emergency response, recovery, and resilience planning. The service enables governments, conservation agencies, disaster management institutions, humanitarian organizations, and regional bodies to make evidence-based decisions before, during, and after disasters.

CEMS consists of three complementary components: **Early Warning and Monitoring**, **On-Demand Mapping**, and **Exposure Mapping**. Together, they support the entire disaster management cycle through Earth observation data and geospatial analyses.

The Early Warning and Monitoring component includes globally accessible applications particularly relevant to Southern Africa:

- [Global Flood Awareness System \(GloFAS\)](#): Provides flood forecasting and monitoring.
- [Global Drought Observatory \(GDO\)](#): Supports drought monitoring and impact assessment.

- **Global Wildfire Information System (GWIS):** Monitors wildfire occurrence and trends.

These applications are available online following registration and provide continuous monitoring and forecasting capabilities that enhance preparedness and early action.

The On-Demand Mapping component generates geospatial products tailored to specific emergencies and preparedness needs. **Rapid Mapping** products provide near real-time situational information during disasters such as floods, cyclones, and wildfires, supporting emergency operations and humanitarian coordination. **Risk and Recovery Mapping** products support preparedness, vulnerability assessments, recovery planning, and risk-informed land-use management.

Exposure and vulnerability assessments generated through CEMS integrate information on population distribution, settlements, infrastructure, and environmental conditions, including data from the **Global Human Settlement Layer (GHSL)**. These analyses are particularly valuable in TFCAs where conservation priorities intersect with communities, tourism infrastructure, transport corridors, and shared natural resources.

The transboundary nature of CEMS makes it especially relevant for TFCAs. By providing geospatial information across entire ecosystems rather than individual national jurisdictions, CEMS facilitates coordinated risk assessment and decision-making. Its key benefits include:

- **Disaster Risk Reduction:** Monitoring floods, droughts, and wildfires to strengthen preparedness and response.
- **Biodiversity Conservation:** Tracking habitat changes, ecosystem degradation, and environmental pressures.
- **Agriculture and Food Security:** Supporting drought monitoring and climate adaptation planning.
- **Water Resource Management:** Improving shared river basin management and hydrological risk reduction.
- **Tourism and Infrastructure Resilience:** Supporting damage assessments and recovery planning following extreme events.
- **Humanitarian Response:** Enhancing cross-border coordination through standardized mapping products and shared situational awareness.

Within the SADC region, practical applications include flood monitoring in major river basins, wildfire tracking across conservation corridors, drought impact assessments in dryland ecosystems, and cyclone response mapping affecting both terrestrial and marine TFCAs. These applications position CEMS as a valuable regional platform for evidence-based planning and cooperation.

Effective use of the On-Demand Mapping service requires understanding the activation process. CEMS can only be formally activated by designated **Authorised Users**, including national focal points, relevant government institutions, and authorised regional or international organisations linked to the European civil protection framework. Public institutions, conservation agencies, humanitarian organisations, and regional bodies seeking access to On-Demand Mapping products must therefore coordinate requests through an Authorised User.

The activation process typically involves:

1. Identification of a disaster event or risk assessment requirement.
2. Definition of information needs and geographic scope.
3. Submission of an activation request through an Authorised User.
4. Validation and approval through relevant coordination mechanisms.
5. Satellite imagery acquisition and product generation.
6. Dissemination of outputs to support response, preparedness, recovery, or resilience planning.

Depending on the request, outputs may include emergency maps, damage assessments, exposure analyses, or risk and recovery products.

For TFCAs, coordinated activation is particularly important due to the transboundary nature of hazards and governance arrangements. Effective application of CEMS requires collaboration among participating countries, conservation authorities, disaster management institutions, river basin organisations, and regional coordination platforms. Joint interpretation and integration of CEMS products into planning processes can strengthen both operational coordination and long-term risk governance.

Despite its significant potential, several challenges continue to limit wider use of CEMS within Southern African TFCAs. Awareness of the service remains relatively low among conservation practitioners, disaster risk management institutions, and development planners. Cross-border coordination constraints can hinder information sharing and joint activations, while technical capacity gaps in geospatial analysis, GIS, and remote sensing reduce the ability of some institutions to fully utilise available products.

Nevertheless, substantial opportunities exist to strengthen the integration of CEMS into regional resilience and conservation frameworks. Incorporating CEMS into TFCA governance structures and management plans can improve evidence-based decision-making and support more coordinated disaster risk reduction efforts. Capacity-building initiatives focused on geospatial analysis, hazard interpretation, and operational use of Earth observation products can further enhance institutional readiness across the region. Regional coordination mechanisms within SADC also provide opportunities to institutionalise the use of Earth observation services in support of climate resilience and sustainable development.

Maximising the benefits of CEMS will require sustained investment in awareness, technical capacity, and institutional coordination. Integrating CEMS outputs into conservation planning, disaster risk reduction strategies, development planning, and infrastructure management can strengthen resilience across shared landscapes. Establishing joint activation procedures and collaborative operational protocols among participating states can further improve transboundary hazard monitoring and emergency response.

As climate-related risks continue to intensify across Southern Africa, the need for integrated and transboundary approaches to risk management becomes increasingly urgent. CEMS provides a practical and accessible mechanism for strengthening preparedness, improving situational awareness, and supporting long-term resilience planning within TFCAs. By enabling access to timely and scientifically robust geospatial information, the service contributes directly to risk-informed development, regional cooperation, and the sustainable management of shared conservation landscapes across the SADC region.